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College of Business Administration

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Lincoln Preparatory School

NORTHEASTERN UNIVERSITY

C O L L E G E S O F

Liberal Arts
Business Administration
Engineering

1950-1951



(COEDUCATIONAL)

BOSTON 15, MASSACHUSETTS

January, 1950

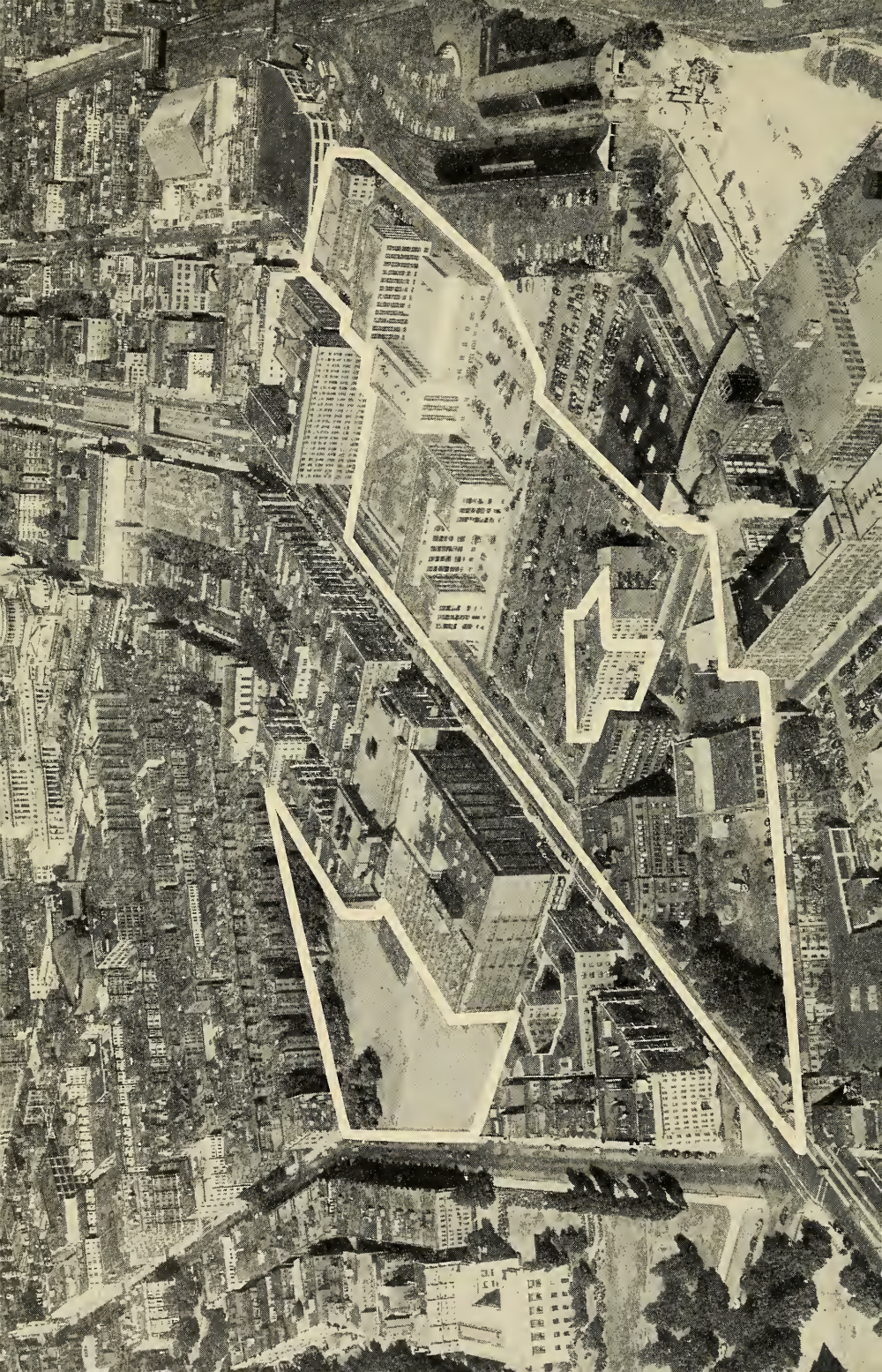
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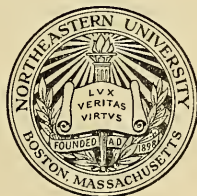


NORTHEASTERN UNIVERSITY

DAY COLLEGES

General Information

1950-1951



(COEDUCATIONAL)

BOSTON 15, MASSACHUSETTS
JANUARY, 1950

←Air view showing Huntington Avenue Site and Buildings

NORTHEASTERN UNIVERSITY

Day Colleges

COLLEGE OF LIBERAL ARTS

COLLEGE OF BUSINESS ADMINISTRATION

COLLEGE OF ENGINEERING

CONDUCTED ON THE CO-OPERATIVE PLAN

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Freshman Academic Calendar

SEPTEMBER, 1950 TO SEPTEMBER, 1951

1950

- SEPTEMBER 6 *Wednesday*: Registration and opening of college year for Division S Freshman Class (1955). Students failing to register promptly on this date will be charged a late registration fee of five dollars (\$5.00).
- OCTOBER 12 *Thursday*: Columbus Day. (College exercises omitted.)
- NOVEMBER 11 *Saturday*: Armistice Day. (College exercises omitted.)
- NOVEMBER 15 *Wednesday*: Registration and opening of college year for Division N Freshman Class (1955). Students failing to register promptly on this date will be charged a late registration fee of five dollars (\$5.00).
- NOVEMBER 18 *Saturday*: End of first term for Division S Freshmen (1955).
- NOVEMBER 20 *Monday*: Second term begins for Division S Freshmen (1955).
- NOVEMBER 23 *Thursday*: Thanksgiving Day. (College exercises omitted.)
- DECEMBER 22 *Friday*: Classes for all students will end at 5:00 p.m. and reconvene on Wednesday, December 27, 1950, at 9:00 a.m.

1951

- JANUARY 1 *Monday*: Celebration of New Year's Day. (College exercises omitted.)
- JANUARY 27 *Saturday*: End of second term for Division S Freshmen (1955) and end of first term for Division N Freshmen (1955).
- JANUARY 29 *Monday*: Third term begins for Division S Freshmen (1955) and second term begins for Division N Freshmen (1955).
- FEBRUARY 21 *Wednesday*: Classes for all students will end at 5:00 p.m. on Wednesday, February 21, 1951, and reconvene on Monday, February 26, 1951, at 9:00 a. m.
- APRIL 7 *Saturday*: End of third term and college year for Division S Freshmen (1955) and end of the second term for Division N Freshmen (1955).
- APRIL 9 *Monday*: Beginning of five-week summer term (term 4) for Division S Freshmen (1955). Summer term may be taken at this time or at the period beginning August 6, 1951. Third term begins for Division N Freshmen (1955).
- APRIL 19 *Thursday*: Patriots' Day. (College exercises omitted.)
- MAY 12 *Saturday*: First five-week summer term for Division S Freshmen (1955) closes.
- MAY 14 *Monday*: Beginning of summer term vacation period for Division S Freshmen (1955).
- MAY 30 *Wednesday*: Memorial Day. (College exercises omitted.)
- JUNE 16 *Saturday*: End of third term and college year for Division N Freshmen (1955).
- JUNE 18 *Monday*: Beginning of the first optional five-week summer term (term 4) for Division N (1955) students.
- JULY 21 *Saturday*: Optional five-week summer term (term 4) for Division N (1955) Freshmen closes.
- AUGUST 6 *Monday*: Beginning of five week summer term period for those students in Division S and Division N (1955) who did not attend in the first summer term periods.
- SEPTEMBER 8 *Saturday*: Second five-week summer term closes.
- SEPTEMBER 10 *Monday*: Registration and opening of college for the academic year 1951-52.

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Assistant Professor of Drawing
Res. Cochituate Rd., Wayland
Assistant Professor of Mechanical Engineering
Res. Randolph St., Canton
Assistant Professor of Civil Engineering
Res. 58 South St., Medfield
Assistant Professor of English
Res. 10 High St., Natick
Assistant Professor of Mathematics
Res. 30 Oak St., Needham
Assistant Professor of Accounting
Res. 27 Belton St., Dorchester
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Instructor in English and History
Res. Broadmeadow Rd., Groton
Instructor in English
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Instructor in Economics
Res. 34 Buckingham St., Cambridge
Instructor in Co-ordination
Res. 353 Cabot St., Beverly
Instructor in Mechanical Engineering
Res. 39 Wyoming St., Roxbury
Instructor in Chemistry
Res. 20 Berkeley Rd., Nantasket Beach
Instructor in Government
Res. 58 Queensberry St., Boston
Instructor in Mathematics and Psychology
Res. 6 Walnut St., Cambridge
Instructor in English
Res. 79 Elliott St., Danvers
Instructor in Co-ordination
Res. 7 Samoset Rd., Winchester
Instructor in Co-ordination
Res. 109 Queensberry St., Boston
Instructor in Mechanical Engineering
Res. 79 Gerry Rd., Chestnut Hill
Instructor in Drawing
Res. 98 Osborne Path, Newton Centre
Instructor in Physical Education (Women)
Res. 60 Kirkland St., Cambridge
Instructor in Mathematics
Res. 11 Park Drive, Boston
Instructor in Business Administration
Res. 369 Boston Ave., Medford
Instructor in Civil Engineering
Res. 111 Winsor Ave., Watertown

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"Freedom"

ERWIN D. CANHAM
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"Present-Day Labor Relations"

JAMES B. CONANT
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"Diversity in American Education"

CHRISTIAN A. HERTER
United States Congressman from Massachusetts
"Your Stake in Foreign Aid"

JOHN P. HIGGINS
Chief Justice of the Superior Court of Massachusetts
"Trends in American Thought"

MILDRED McAFEE HORTON
Former President, Wellesley College
"Wanted — Davids"

SIDNEY LOVETT
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"The Place of Religion in University Life"

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"Will Europe Survive"

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"American Business and American Education, the High Hopes of Mankind"

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"America — Opportunity's Last Refuge"

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REV. OLIVER W. CHILDERS

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Rabbi, Temple Mishkan Tefila, Roxbury

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REV. JOHN P. WHALEN
Curate, St. Ann's Catholic Church, Boston

REV. DR. NATHAN W. WOOD
Minister, First Baptist Church, Arlington

REV. WILBUR C. ZIEGLER
Minister, Broadway Methodist Church, Lynn

Northeastern University

General Statement

NORTHEASTERN UNIVERSITY is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in whom the control of the institution is vested. The Board of Trustees has four standing committees: (a) an Executive Committee which has general supervision of the financial and educational policies of the University; (b) a Committee on Buildings which has general supervision over the building needs of the University; (c) a Committee on Funds and Investments which has the responsibility of administering the funds of the University; (d) a Committee on Development which is concerned with furthering the development plans of the University.

Founded in 1898, Northeastern University, from its beginning, has had as its dominant purpose the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the programs of other institutions but has sought "to bring education more directly into the service of human needs."

With respect to program, Northeastern has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated;
- To effective teaching;
- To advising and guiding students;
- To giving students the chance to build well-rounded personalities through a balanced program of extracurricular activities.

The Northeastern Plan of Education is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day.
- Adult Education by Night.

The plan has been developed in such a way that experience in jobs with pay helps students of limited financial resources to secure an education and at the same time to gain the maximum educational benefit from their practical experience. So far as the New England States are concerned, Northeastern University is the only institution whose Day Colleges, other than the School of Law, are conducted fully under the Co-operative Plan.

The several schools and programs of the University are conducted either under the name "Northeastern University" or by its affiliated schools — the Lincoln Schools. The following is a brief outline of the principal types of educational opportunities offered.

In the field of Co-operative Education there are three Day Colleges — the College of Liberal Arts, the College of Engineering, and the College of Business Administration. The College of Liberal Arts offers majors in the usual fields of the arts and the sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. The College of Engineering, one of the largest engineering colleges in the United States, has curricula in Civil, Mechanical, Electrical, Chemical, and Industrial Engineering. The College of Business Administration has curricula in Accounting, Industrial Relations, Marketing and Advertising, Finance and Insurance, and Business Management. The College of Engineering and the College of Business Administration confer the degree of Bachelor of Science with specification indicating the field of specialization. The Co-operative Plan, under which all of these Day Colleges operate, enables the student to alternate regular periods of classroom instruction with supervised employment in an industrial or commercial position, thus combining theory and practice in an exceedingly effective manner. Apart from the educational advantages of the Co-operative Plan is the opportunity for self-support while the student is pursuing his studies at Northeastern University. During the co-operative periods, students not only gain experience but are also paid for their services. Approximately five hundred fifty business and industrial concerns co-operate with Northeastern University in making this program effective.

The School of Law conducts both a day and an evening undergraduate program which prepares for admission to the bar and for the practice of the law and leads to the degree of Bachelor of Laws. A graduate program is also offered which leads to the degree of Master of Laws.

The Adult Education Program has been developed in the evening work of the School of Law as indicated above, in the School of Business, and in the evening courses of the College of Liberal Arts. The School of Business has curricula in Business Management, Industrial Management, Accounting, Marketing, Law and Business, and Engineering and Management. It also conducts a Labor Relations Institute, an Institute of Retailing, an Institute of Office Management, an Institute of Traffic Management and an Institute of Insurance. This School awards the Bachelor of Business Administration degree with specification. The University also operates a division of the School of Business in Springfield. The College of Liberal Arts offers certain of its courses during evening hours constituting a program, three years in length, equivalent in hours to one-half the requirements for the A.B. or S.B. degree, and providing a general education and preparation for admission to the School of Law. The degree of Associate in Arts is conferred upon those who complete this program.

The Adult Education Program has also been developed through the Lincoln Schools, which are affiliated with and conducted by Northeastern University. The classes in these schools are held at convenient

evening hours. The Lincoln Technical Institute offers curricula upon a college level in various phases of engineering leading to the degree of Associate in Engineering; the Lincoln Preparatory School prepares students for admission to college and offers other standard high school programs.

Buildings and Facilities

Boston — A Great Educational Center

The fact that Northeastern University is in Boston broadens the educational and cultural opportunities of its students. Few other cities in the country are so rich in the finest elements of American life. Many of its historic buildings, such as the Old State House, Faneuil Hall, and the Old North Church, have become museums for the preservation of old documents, paintings, and other collections representative of early colonial life. The Boston Public Library and the Museum of Fine Arts, both within a few blocks of the University, are widely noted for their treasures of literature and art. Even nearer to the University is Symphony Hall, home of the world-famous Boston Symphony Orchestra. And the many churches within Greater Boston not only afford the opportunity of hearing distinguished preachers but through their student clubs and young people's societies make possible for students a fine type of social and intellectual life.

University Buildings

Location

Northeastern University, except for its School of Law, is housed in five buildings located on Huntington Avenue, Boston, at the entrance to the Huntington Avenue Subway and opposite the historic Boston Opera House. The main administrative offices of the University are located in Richards Hall.

The chief railroad centers of Boston are the North and South Stations. To reach the University from the North Station, board a car going to Park Street, at which junction transfer to any Huntington Avenue car. To reach the University from the South Station, board a Cambridge subway train for Park Street Under. There go up one flight of stairs and board any Huntington Avenue car, alighting at the "Northeastern" Station which is the first stop outside the subway.

Beacon Hill Building

The building at 47 Mt. Vernon Street is a three-story structure completely equipped with administrative offices, faculty offices, classrooms, library and student recreational rooms.

East Building

The East Building provides temporarily for the University Library, a number of classrooms, and several instructional department offices. Jacob P. Bates Hall, also in this building, is used for lectures and group meetings involving up to 400 people.

Science Hall

Science Hall comprises a basement and four stories housing laboratories, classrooms and offices. Chemical Engineering facilities take up the entire basement and part of the first floor. Faculty offices and laboratories of the College of Business Administration occupy the remainder of the first floor. The second and third floors contain a large lecture hall, several drawing rooms, and classrooms. The fourth floor is given over almost entirely to the biological laboratories and offices, research areas, and the biology lecture room.

Richards Hall

Richards Hall contains about 100,000 square feet of floor area providing space for administrative offices, the Bookstore, classrooms, and many other facilities.

The major portion of the building is given over to laboratories and classroom areas. Laboratory space is provided for the following: Mechanical Engineering, Industrial Engineering, General and Advanced Physics, Radio, Psychology, Inorganic, Organic, Analytical and Physical Chemistry, together with several special research laboratories.

In addition to the usual classroom areas are a large chemistry lecture hall and two general lecture halls seating 300 and 200 students respectively. On the fourth floor are located three large, well-lighted and well-equipped drawing rooms for carrying on designing and drafting which form so important a part of technical instruction. The penthouse contains a radio laboratory, astronomy laboratory, and a blueprint room.

Student Center Building

The Student Center Building, completed in September, 1947, comprises a front building of five stories located in the center of the campus and the Alumni Auditorium which seats about 1300 people.

Outstanding features of the Student Center Building are the beautiful memorial chapel which accommodates 250 persons given in memory of Charles F. Bacon, the large public lounge given in memory of Edward J. Frost, the Student Health Center given in memory of Samuel Glass, the Student Activities Office given in memory of Albert Farwell Bemis, the Student Union Lounge given in memory of Richard Mitton, the Student Conference Room given in memory of Russell Whitney, the Student Reading Room given in memory of Gordon F. Wright, the Faculty Lounge given in memory of Robert Lee Studley, and the main lobby given by Clara and Joseph F. Ford.

The Student Center also contains headquarters for the various student organizations such as the *Northeastern News*, *The Cauldron*, Dramatic Society, the Camera Club, and the Northeastern Student Union.

Facilities for lunching purposes are provided in the University Commons on the ground floor. Also located on the ground floor is a large recreational area especially for women students. Although the building is primarily used for student activities, there are a few classrooms on the third and fourth floors.

Botolph Building

The Botolph Building, located directly behind the East Building, houses the following laboratories: Advanced Industrial Electronics, Electrical Measurements, Dynamo, High Tension, Electronics and Communications, Ultra High Frequency, Hydraulics and Sanitary Engineering, and Concrete and Highway. In addition, it provides space for department offices, classrooms, conference rooms and one large drafting room.

Laboratories

The laboratories of the University fall into three categories. The first group includes those for experimental work in the pure sciences of biology, chemistry, and physics. The second includes those for the study of engineering in its major branches (civil, mechanical, electrical, chemical, and industrial). The third comprises the business and statistical laboratory.

In addition to these laboratory facilities which are described in the following pages, motion pictures and lantern slides are frequently used to supplement classroom instruction. For this purpose, there are available motion picture projectors for both sound and silent film as well as several lantern slide projectors.

Biology

The Department of Biology occupies the fourth floor of Science Hall which contains, in addition to the Zoological, Anatomical, Bacteriological, and Botanical Laboratories, its offices, research areas, and lecture hall. The laboratories are fully equipped for general and special work, with extensive collections of museum preparations, models, and specimen collections displaying thousands of specimens illustrating the various fields of biological study.

Chemistry

The Chemical Laboratories located on the fourth floor of Richards Hall were given to the University by the Charles Hayden Foundation. They are splendidly equipped for work in general and inorganic chemistry, qualitative and quantitative analysis, and organic and physical chemistry. In addition, several service rooms and space for a limited amount of research are provided.

General Chemistry and Qualitative Analysis—This laboratory is fully equipped with water, gas, electricity, steam, and fume hoods. A hydrogen-sulphide room, a balance room, and a conference room are also a part of this unit.

Organic Chemistry—This laboratory provides about six feet of working space for each student. The facilities are similar to those in the general chemistry laboratory and, in addition, there is provided a large evaporating unit and an organic combustion furnace.

Quantitative Analysis and Physical Chemistry—The tables and fume hoods and other equipment in this room are similar to those in the Organic Laboratory. In addition, a large drying oven, special balances, electrical instruments, temperature measuring devices, and other specialized apparatus are provided.

A small laboratory for technical analysis of such materials as coal, vegetable oils, petroleum, textiles, and rubber adjoins the main laboratory, and a special laboratory is also available for electrolytic work.

Research—Three small laboratories are equipped for advanced research. These are available for graduate thesis investigations.

Physics

The Physics Laboratories located on the second floor of Richards Hall are fully equipped for elementary and advanced study as well as research. In addition, an amateur radio transmitting station is located in the penthouse on Richards Hall.

General—This laboratory, designed for elementary instruction, is provided with gas, water, and electricity. A spectrometer room, a photographic room, and a photometer room are directly connected with this laboratory.

A second smaller laboratory is equipped for more specialized experiments, and has facilities for glass blowing and high vacuum work. A flexible electrical system here permits use of all the supplies available to the Advanced Laboratory.

Advanced—This laboratory is designed with a view to both precision and flexibility. A special switchboard provides single phase and polyphase alternating current and a variety of direct current potentials. A workshop with lathe, drill press, grinder, and other tools as well as two separate research rooms complement the laboratory.

Optics—This laboratory used for advanced work in both physical and geometrical optics is especially equipped for the former. Direct electrical connection to the special switchboard in the Advanced Laboratory is provided for use with the various light sources.

Radio—This laboratory has a complete set of apparatus for conducting experiments in Radio and Electronic Circuits. Apparatus includes crystal oscillators, audio and radio frequency amplifiers, audio and radio

frequency oscillators, cathode ray oscilloscopes, frequency modulation and industrial electronic equipment, complete radio transmitters and receivers.

The amateur radio transmitting station is in a completely shielded room and operates on both radiotelephone and radiotelegraph. Facilities are also available for research.

Psychology

The Psychology Laboratories, located on the third floor of Richards Hall, are equipped for training and research in both experimental psychology and psychometrics.

The Experimental Laboratory is designed for instruction in learning processes, the factors involved in perception and the bases of sensation. Opportunity is provided for individual research for advanced students.

The Psychometrics Laboratory is equipped for training in the use of mental tests. Instruction is available on the nature of tests of intelligence, aptitudes, and personality. There is opportunity for practice and research in the use of psychometric instruments.

Civil Engineering

Most of the laboratory work in civil engineering is, of course, actual field work in surveying. A considerable amount of demonstration equipment including many models is available for use in the study of structures, hydraulics, sanitary engineering, highways, concrete and soil mechanics.

Surveying—The Department of Civil Engineering is provided with a variety of excellent and up-to-date equipment for field work. The instruments have been chosen to make possible the working out of advanced as well as elementary field problems, and to acquaint the students with the principal makes and types of instruments in general use.

Hydraulics and Sanitary Engineering — This laboratory located on the first floor of the Botolph Building is equipped with demonstration measuring devices for use in connection with the courses in hydraulics.

Complete equipment is also provided for water and sewage analysis, and research students can be accommodated in this field.

Concrete and Highway Engineering — Located on the first floor of the Botolph Building, this laboratory is equipped for conducting all the standard tests on cement, aggregate, and concrete. The testing machines in the Mechanical Engineering Department are available for testing use by Civil Engineering students.

A large moist room with controlled temperature and 100% humidity makes possible the proper curing of specimens.

The testing areas of this laboratory are equipped with temperature and humidity control so that research may be carried on under standard conditions.

Some of the types of special equipment are the following: sonic modulus device, hand powered and mechanized flow table, autoclave, and a 12 cubic foot freeze-thaw unit.

Equipment is also available for conducting a major portion of the accepted tests on bituminous materials as used in highway work. Soil Mechanics equipment consists of a general soil sampler, consolidometer, wet-mechanical gram-size analysis and a quicksand demonstration tank.

Aerial Photogrammetry—The apparatus in this laboratory may be used to instruct the students in the basic principles of photogrammetry, or may be used to instruct the students in the more technical phases of photogrammetry such as horizontal control, vertical control, stereoscopic plotting, mechanical triangulation, and the tri-metrogon method of plotting.

Mechanical Engineering

The Mechanical Engineering Department has a well-equipped laboratory containing a wide variety of modern machines and occupying over 10,000 square feet of floor space in Richards Hall. A canal located in the laboratory, having a capacity of about 18,000 gallons of water, is used for hydraulic experiments. Special areas are available for oil testing, mechanics, research and similar purposes. Auxiliary equipment is used for making the usual tests and measurements.

Steam Power—The apparatus operated by steam includes a wide variety of steam engines, turbines, pumps, condensers, heat exchangers, and measuring instruments.

Hydraulic Equipment—Water pumps are available for testing and include piston pumps, centrifugal pumps, power and rotary pumps, as well as a pulsometer and steam injector. Different types of weirs with hook gages, and other flow measuring devices including pilot tube, venturi tube, orifice and water meters are used for flow of fluids experiments.

Fans and Air Compressors—A steam driven air compressor and a centrifugal fan are arranged for testing purposes.

Heating, Refrigeration, and Air Conditioning—Heating equipment includes a steam boiler, a hot air furnace and a unit steam heater. Air conditioning apparatus is available for heating, cooling, humidifying and dehumidifying. There is in addition a constant temperature room which may be used for either heating or cooling purposes.

Metallography and Heat Treatment—A metallograph capable of magnifying up to 2500 diameters is available for photographing crystalline structures of metals and alloys. Sanding and polishing equipment, and metalurgical microscopes are used in the preparation and examination of the specimens.

For the study of heat treatment, several electric furnaces and a gas-fired furnace are available for use.

Internal Combustion Equipment—Included under this heading are several gasoline and oil engines, automobile engines, Diesel engines and a

C.F.R. machine. Some of these are set up for running experimental tests, but several are available for dismantling and demonstration purposes.

Testing Materials—Universal testing machines of 10,000, 15,000, 50,000 and 300,000 lb. capacities are used for most of the tests. In addition, there are four types of hardness testers, 10,000 in. lb. torsion, 220 ft. lb. impact, endurance and bend units as well as equipment for non-destruction tests, such as photoelasticity and magnaflux. Suitable strain gages and other instruments for conducting the undergraduate tests are available.

Aeronautics—The laboratory is provided with a 3-foot hexagonal throat wind tunnel for model testing up to speeds of 150 miles per hour. A number of types of airplane engines are available for inspection and dismantling purposes. Demonstration apparatus for streamline flow is also included.

Metal Processing—The laboratory for metal processing consists of lathes, planers, boring mill, drill presses, milling machine, shaper, grinders, and small tools. The laboratory also has numerous heat treatment furnaces, oxyacetylene welding and cutting tools, electric resistance welding and other equipment to adequately carry on the work in production processes.

Miscellaneous Equipment—In addition to the apparatus previously mentioned, the laboratory has available testers for calibrating gages, oil testing equipment, fuel calorimeters, steam calorimeters, and friction testers, as well as instruments for measuring speed, temperatures, pressures and flow of fluids.

Electrical Engineering

The ground floor and part of the first floor of the Botolph Building are occupied by the electrical laboratories. These cover an area of approximately 9000 square feet and include the dynamo, measurements, high tension, electronics and communications, ultra high frequency, and advanced industrial electronics laboratories.

Dynamo—This laboratory is provided with both 60 cycle 3 phase 230 volt alternating current and 115-230 volt three-wire direct current power services. The equipment includes more than sixty motors and generators, both AC and DC, of different types, together with the necessary auxiliary equipment to operate and test them. In addition, there are numerous transformers and other static equipment including a steel tank mercury arc rectifier unit. The motors and generators have been selected to reduce as much as possible the risk from high voltage and yet be typical of the range of commercial apparatus.

Electrical Measurements—The equipment here is of two distinct types: first, that planned primarily for teaching principles of measurement and, secondly, that which is used in teaching advanced standardizing methods

as well as for calibrating instruments in other laboratories of the University. Briefly, this laboratory is equipped for practically any work in electrical measurements except for the absolute determinations carried on in national standardizing laboratories.

High Tension—This laboratory is equipped with the necessary transformers and auxiliary equipment to provide 4 Kva. at 50,000 volts potential. A special room has been equipped for cable and insulation testing, and impulse testing of insulation is made possible by a surge generator capable of producing waves having crest values up to 300,000 volts. A 4,000 ampere low voltage transformer is also available for the study of the effects of heavy currents in conductors, switches, and contacts.

Electronics and Communications—This laboratory is equipped with apparatus for about forty experiments in the field of electronics and radio-engineering. The apparatus includes several radio frequency signal generators, vacuum tube voltmeters, cathode-ray oscilloscopes, audio oscillators and a primary frequency standard.

Ultra High Frequency—The equipment in this laboratory consists of several ultra-high-frequency generators, cylindrical and rectangular wave guides, antenna arrays and reflectors, frequency measuring equipment, and power measuring devices.

Advanced Industrial Electronics—In this laboratory equipment is available to demonstrate and test power apparatus controlled by electronic means. The following pieces of equipment are among those found in this laboratory: Induction and Dielectric heating, Industrial X-Ray, Controlled Welding, Ignitron Inverter and Rectifier, Motor speed control, Generator voltage control, Electrostatic air cleaning, Photoelectric control, and Automatic Synchronizing apparatus. Characteristics of individual power electron tubes are also investigated, including high vacuum rectifiers, ignitrons and thyatrons.

Chemical Engineering

The Department is now located on the ground floor of Science Hall. A total of 8,218 square feet has been allotted for its exclusive use.

Unit Operations Laboratory—This laboratory is primarily devoted to the study of flow of fluids, filtration, heat transfer, distillation, evaporation, absorption, and drying; but houses in addition equipment for carrying out such unit processes as nitration, reduction, and sulphonation.

Approximately 1,000 square feet of this laboratory consists of a double floor area serviced by a traveling crane for installing and repairing semi-plant scale equipment.

Crushing, Grinding and Separation Laboratory—A separate laboratory equipped with a ventilating fan houses equipment for crushing, pulverizing, and separating solids. All equipment is operated by individual

electric motors with speed control frequently taken advantage of to get experimental data.

Machine Shop—A small, well-equipped shop is available for the construction and repair of equipment.

Research Space—In addition to the Research Laboratory, the mezzanine floor of the Unit Operations Laboratory is available for investigating new processes.

Industrial Chemical Laboratory—This laboratory is equipped with modern laboratory benches and is located next to the stock room. The determination of the optimum conditions for carrying out unit processes on a small scale is accomplished in this laboratory.

Industrial Engineering

Students in the Department of Industrial Engineering share in the use of the Mechanical Engineering Laboratories and the Statistics Laboratory.

Industrial Engineering Laboratory—This laboratory which is located in Richards Hall is completely equipped with the latest facilities and tools used by methods engineers. Besides the general equipment consisting of benches, tables, lathe, jigs, fixtures, and racks, the laboratory has an ample supply of time study boards, stop watches and timers for time study work. There are also available complete motion picture equipment and microchronometers for micromotion work.

Statistics Laboratory

The Statistics Laboratory is equipped with the commonly used office machines, typewriters, hand and electric adding machines, and hand and electric calculators. This laboratory is used primarily in connection with the courses in Statistics, but it is available for students in connection with reports and the statistical work of other courses.

Accounting and Advertising Laboratory

The Accounting and Advertising Laboratory is being developed to provide permanent display equipment and materials, teaching aids, and production equipment for the advanced courses in the fields of Accounting and Advertising.

Design and Drafting Rooms

The University possesses large, light, and well-equipped drawing rooms for the carrying on of the designing and drafting which form so important a part of engineering work. These rooms are supplied with lockers containing the drawing supplies, files containing blueprints, and photographs of machines and structures that represent the best practice. Drafting room blackboards are equipped with traveling straightedge devices which facilitate speed and accuracy in blackboard demonstrations.

Libraries

The general University library is located on the first floor of the East Building. The reading room seats about 360 students at one time, and the stack capacity approximates 40,000 volumes. Here are available all general reference books, professional and scientific volumes, and an extensive collection of general, scientific and professional magazines.

Adjacent to the main library is the Channing Pollock Library, a memorial to the great American dramatic critic and writer whose private collection of over 3000 volumes on the drama and related subjects was given to Northeastern University by his daughter, Miss Helen Channing Pollock.

Library hours are as follows during the fall, winter, and spring:

8:45 A.M. to 7:30 P.M. Mondays through Fridays.

8:45 A.M. to 12:00 M. Saturdays.

Closed on Sundays and Holidays.

During the summer months library hours are as follows:

8:45 A.M. to 5:30 P.M. Mondays through Fridays.

Closed Saturdays, Sundays and Holidays.

The library is under the direction of a librarian and several competent assistants, all of whom have had special training.

A general reading room is maintained by the Northeastern Student Union in Room 302 of the Student Center. The books located here are chiefly nontechnical works dealing with contemporary affairs, religious problems, international relations, travel, etc., among which students may browse during periods of relaxation. A number of literary and religious periodicals are also available in this room.

Boston Public Library

All members of the University, whether resident or nonresident students, have the privilege of taking books from the Boston Public Library and of using the library for general reference and study. Non-resident students obtain their Boston Public Library cards through the Northeastern University Library. Inasmuch as this is one of the best in the country, it presents unusual opportunities to the students. Within a few minutes' walk from the University, it enables students to have unlimited reference to books and periodicals bearing upon their studies.

Equipment for Physical Training

Gymnasium areas are provided as follows: three gymnasium rooms, a twelve-lap running track, boxing and wrestling rooms, handball and squash courts, bowling alleys, showers, steam baths, massage rooms, electric cabinet baths, and locker rooms.

Special areas for the physical education program for women students are located in the Student Center Building.

Excellent practice facilities for tennis and track are available in the space adjacent to the North Parking Area.

Huntington Field

Huntington Field, the University athletic field, is located on Kent Street in Brookline and provides ample facilities for track, baseball, football and other outdoor sports. The University maintains bus service between its Huntington Avenue plant and the Huntington Field, making it possible for students to get back and forth with a minimum loss of time. The field is equipped with a commodious field house as well as ten sections of stadium seats for spectators.

Student Activities

Northeastern University regards student activities as an integral part of its educational program. One of the main departments of the University, the Student Activities Department is charged with the responsibility of co-ordinating the various types of activities and of administering the social, musical, literary, and athletic organizations in such a way as to enable each to contribute in a wholesome, worthwhile manner to student life at Northeastern. Every student is encouraged to participate in such activities as may appeal to him.

Members of the faculty also are interested in extracurricular activities. A faculty adviser is appointed for each student organization. His function is to encourage the students in the development of their programs, and to give them the benefit of his experience and mature point of view in integrating these programs with other important phases of college life.

One of the outstanding contributions of the Co-operative Plan in the field of higher education has been its capacity to develop in students those powers of social understanding that are so essential to success in professional life. At Northeastern the program of student activities is made to contribute to this end in a very real way. It is a conscious aim of the student activities advisers to develop among their advisees those qualities of personality and character which will enhance their usefulness as future professional men and citizens. Students have splendid opportunities to develop administrative and executive ability as leaders of undergraduate organizations. No academic credit is awarded for any student activity. This has been no deterrent, however, to student participation in extracurricular activities, for a substantial majority of the undergraduate body participate annually in one or more forms of student activity.

Athletic Association

All students in the Day Colleges are members of the Northeastern University Athletic Association. Policies of the association are passed upon by a Faculty Committee on Student Activities. This committee decides what students are eligible to participate in athletics, what the various sports schedules shall be, and what students may be excused from classes to represent the University on athletic trips.

The actual administration of the athletic program is in the hands of a second committee, known as the General Athletic Committee, which consists of the Director of Student Activities, the captains and managers of all varsity teams, and the coaches as ex officio members.

The University maintains both varsity and freshman teams in baseball, basketball, cross-country, football, hockey, and track. Intercollegiate games and meets are arranged with the leading colleges in the East. In addition to intercollegiate athletics the athletic association conducts an intramural program in various sports.

Honor Societies

Three honorary societies are chartered in the Day Colleges:

Tau Beta Pi, in the College of Engineering (Massachusetts Epsilon Chapter).

The Sigma Society, in the College of Business Administration.

The Academy, in the College of Liberal Arts.

Election to the college honorary societies is founded primarily upon scholarship, but before a man or woman is privileged to wear the honorary society insignia there must be evidence of an integrity of character and an interest in the extracurricular life of the University as well as an acceptable personality. The societies have memberships consisting of the outstanding men and women in the Day Colleges. Election to an honorary society is the highest honor that can be conferred upon an undergraduate.

Publications

"*The News*"—A college newspaper, the *Northeastern News*, is published each week throughout the college year by a staff selected from the student body. The copy is prepared, edited, and published by the students themselves with the counsel of a faculty adviser. Opportunity is afforded for the students to express their opinions on subjects relating to study, co-operative work, social events, or topics of the day. Positions on the *News* staff and promotions are attained by competitive work. The paper is in part supported by advertising, both national and local, and in part by a portion of the student activities fee. The *Northeastern News* is a member of the Eastern Intercollegiate Newspaper Association, and sends one of its editors to the annual convention of this association each year. Copies of the *News* are mailed to upperclassmen when they are at co-operative work and to freshmen after the close of their college year.

"*The Cauldron*"—The combined senior class publishes annually a college yearbook, *The Cauldron*. It is ready for distribution in the latter part of the second term and contains a complete review of the college year with class histories, pictures of all seniors, of the faculty, and of undergraduate groups, as well as a miscellany of snapshots and drawings contributed by students.

Student Council

Student government of the Day Colleges at Northeastern University is vested in the Student Council, composed of elected representatives from the various classes. The Council is the authority on all matters relating to student policies not definitely connected with classroom procedure. It has jurisdiction, subject to faculty approval, over all such matters as customs, privileges, and campus regulations.

Student Union

The purpose of the Northeastern Student Union is to deepen the spiritual lives of Northeastern men and women through the building of character, to create and promote a strong and effective Northeastern University spirit in and through a unified student body, to promote sociability, and to emphasize certain ethical, social, civic, intellectual and avocational values.

All students are encouraged to participate in the activities of the Union, no matter what their religious faith, as the work of the Union is entirely nonsectarian.

The Union conducts a weekly chapel service in the Bacon Memorial Chapel in the Student Center Building, to which all faculty members and students are invited. The service, which is nonsectarian and voluntary, is held on Wednesdays from 1:15 to 1:45 o'clock. Many eminent preachers of Greater Boston are engaged to deliver brief addresses.

Professional Societies and Clubs

To assist in the promotion of social, cultural, and intellectual advancement through informal channels, a number of professional societies and clubs are sponsored.

Biology Club — The Biology Club (Nu-Beta) serves to stimulate interest in the biological sciences by presentations of motion picture films, lecturers and field trips. Membership is open to all students without restriction.

Camera Club — The Camera Club welcomes all men and women interested in photography. Weekly discussions and special evening lectures by guest artists are part of the yearly program. Field trips, monthly photo contests and a general exhibition add to the interest and progressive work of this organization.

Chess Club — The Chess Club gives both beginners and experts an opportunity to enjoy the game. Yearly tournaments are held among the members and, in past years, the best among the members have engaged in intercollegiate competition.

Debating Society — The purpose of the Debating Society, formed in 1936, is "to foster and promote an interest and facility in formal argumenta-

tion; to develop an impartial, unbiased, and intellectual consideration of questions and issues of current interest; and to sponsor intercollegiate relationships and competition in the debating field." Membership is open to all students of the Day Colleges.

Dramatic Club—The Silver Masque affords an opportunity for those students interested in dramatics to participate in the production of several pieces in the course of the college year. Qualification for the cast and for positions on the business staff is through competition under the direction of the faculty adviser.

Engineering Societies, National—Students in the several professional curricula of the College of Engineering operate Northeastern University Sections of the appropriate national professional societies. Chief among these are the following:

- American Society of Civil Engineers
- Boston Society of Civil Engineers
- American Society of Mechanical Engineers
- American Institute of Electrical Engineers
- American Institute of Chemical Engineers
- Society for the Advancement of Management
- American Chemical Society

Members of the engineering faculty who hold membership in the parent organizations serve as advisers to these student groups. Meetings are held regularly, usually at night so that students from both divisions may attend, and practicing engineers are invited to address the sections. Occasionally appropriate motion pictures are shown, or the group visits some current engineering project in the vicinity of Boston. The College of Engineering encourages these student sections of the technical societies in the belief that they provide a wholesome medium for social intercourse as well as a worthwhile introduction to professional life.

Membership in the student sections of the American Society of Civil Engineers and Boston Society of Civil Engineers, the American Society of Mechanical Engineers, or the American Institute of Electrical Engineers also includes membership and privileges of the Engineering Societies of New England. This organization is an affiliation of all the major technical societies of Boston and vicinity and provides valuable lectures, smokers, and informal meetings with the outstanding men engaged in engineering work in Boston and vicinity.

Husky Key—This organization for the promotion of school spirit provides special services at athletic events and for visiting teams and other groups.

Hus-Skiers—The purpose of the Hus-Skiers is to hold an integrated program of ski activity, including weekend outings during the winter season. A tournament is held at the close of the season in which all members are eligible to take part. The club holds membership in the New England Intercollegiate Ski Conference. Skiing is recognized as a minor sport.

International Relations Club—The International Relations Club was founded for the purpose of studying and discussing those current national and international events and issues which vitally concern our American life and institutions.

It is the intention of the club to deal with all questions in an impartial and broadminded manner, and to take an intelligent and effective part in promoting international understanding and harmony. The club maintains contacts with similar organizations in other colleges.

Membership is not open to freshmen, and only to those upperclassmen who maintain good scholarship.

Law and Accounting Club—All students interested in accounting and law are invited to join this stimulating club. Problems and cases involving the interrelations of accounting and law are presented and discussed at club meetings. Although upperclassmen usually present problems arising out of thesis or co-operative work, speakers from the professional world come to the meetings to present papers and lead the student discussion.

Marketing and Advertising Club—The purpose of the Marketing and Advertising Club is to increase among its members the knowledge of the theory and practice of marketing and advertising. Any student of Northeastern University while enrolled in any of the marketing and advertising courses of the College of Business Administration is eligible to active membership in this club. Meetings are held each ten-week period at which executives from Greater Boston are invited to discuss current issues in the field.

Mathematics Society—The Mathematics Society encourages the study of topics of mathematical interest which are either outside or beyond the scope of the regular mathematics courses. Membership is restricted to those men and women who have completed one and one-half years of study in mathematics and have an average grade of not less than "C" in mathematics courses up through differential calculus. The club meets once every five weeks in the evening. Although membership is limited to upperclassmen, any student is always welcome to any meeting, and freshmen especially interested in mathematics are always welcome.

The final program of the year is devoted to a dinner meeting for which some prominent outside speaker is procured.

Musical Clubs—The Department of Student Activities sponsors musical clubs, such as the following: concert orchestra, band, glee club, and dance orchestra, for which all students with musical ability are eligible. Membership in the various musical clubs is attained by competitive effort.

Each organization has a faculty adviser and each elects a representative to the Musical Clubs Council. The purpose of this council is to coordinate the various musical activities of the Day Colleges. At the annual Musical Clubs Banquet, held early in the spring, charms are awarded to the leaders and managers of the several clubs and to members who have played over a period of three full years.

Omega Sigma Society—This club was organized in 1943 for all women students enrolled in the Day Colleges, to derive social, moral and intellectual benefits for both themselves and the University.

Radio Club—One of the most popular undergraduate activities is the Radio Club. Members are provided opportunity for code practice and are encouraged to obtain their amateur licenses. The club owns and operates station W1KBN, a short wave transmitter, located in the Radio Laboratory in the penthouse of Richards Hall. Meetings are held about once a month for the discussion of technical matters. Practicing radio engineers are frequently invited to address the club at evening meetings, when students in both divisions may attend.

Science Club—Membership in the Science Club is open to students who maintain satisfactory scholastic standing. The club has access to machine shops for the construction of telescopes and other instruments. It also has quarters in the penthouse on the fifth floor of Richards Hall.

Yacht Club—The Yacht Club is a member of the Intercollegiate Yacht Racing Association. The club participates in regattas held in the Charles River Basin and also in regattas held at other colleges. Yachting is recognized as a minor sport.

Class Organization and Activity

Each of the classes in the Day Colleges elects its officers and carries on activities as a class. Dances are sponsored by the classes at regular periods throughout the year. One of the high lights of the social program is the Junior Promenade, held each spring at one of the Boston hotels.

Seniors plan a number of activities just prior to Commencement.

Convocations

The hour from 12:00 to 1:00 on Wednesdays throughout the year is reserved by the University for convocations and other large meetings. Attendance at convocations is compulsory. Among these meetings are included three all-Day-College meetings at Symphony Hall known as the Fall Convocation, Honors Convocation, and Alumni Convocation which bring before the student body some of the ablest and foremost leaders of our country. When the reserved hour is not occupied by a University meeting, concerts, athletic rallies, and class meetings may be held instead. Such meetings are under the direction of the Department of Student Activities.

Fraternities

There are at present nine local Greek letter fraternities chartered by Northeastern University. Each fraternity is provided with a faculty adviser who is responsible for the proper administration of the fraternity house under the rules and regulations established by the faculty. The list of fraternities in the order of their establishment is as follows:

1. Beta Gamma Epsilon
2. Alpha Kappa Sigma
3. Nu Epsilon Zeta
4. Sigma Kappa Psi
5. Phi Beta Alpha
6. Phi Gamma Pi
7. Sigma Phi Alpha
8. Kappa Zeta Phi
9. Gamma Phi Kappa

Elected representatives from each fraternity make up an Inter-Fraternity Council, a body which has preliminary jurisdiction over fraternity regulations. Its rulings are subject to the approval of the Faculty Committee on Student Activities.

The Co-operative Plan

What It Is

The Co-operative Plan of Education is founded on the educational philosophy that supervised employment in the occupational field for which a student is training enhances comprehensive learning and vocational adaptation. It utilizes, in addition to the usual classroom and laboratory exercises, the practical values of the work-a-day-world environment, thereby enabling the student not only to become acquainted with certain job skills and operations concurrently with his academic training but also to develop his confidence and capacity to arrive at intelligent conclusions based upon a knowledge of practice as well as of theory.

How It Works

The Co-operative Plan works in the following manner. Upperclassmen, including both men and women, are divided into two nearly equal groups, one of which is called Division A and the other Division B. Each student is assigned a job with some business or industrial concern. The Division A students start the college year with a term of classroom work, while the Division B students start the year with a term at co-operative work. At the end of that term, the Division A students go out to work with a co-operating firm, while their places in the classrooms are then taken by their alternates, the corresponding Division B students. When the next term has passed the Division A students return to college and the Division B students return to the co-operative job. The alternation of work and classroom study continues throughout the year so that an upperclassman has two terms of ten weeks and one of five weeks at college, two terms — one of ten weeks and one of fifteen weeks — at co-operative work, and a brief vacation.

Similarly, each co-operating employer is thus assured of continuous service of a pair of co-operative students alternating with each other throughout the year. This assurance naturally tends to stabilize employment and encourages the co-operation of employers.

Faculty Co-ordinators

Each student is assigned to a co-ordinator who is responsible for all phases of the co-operative work program for his group of students. He interviews them during the freshman year and discusses with them various vocational objectives and answers such questions as the students

may have in regard to the many activities of business and industry. He studies them in the light of their physical condition, scholastic attainment, interests, aptitudes, and other factors bearing upon their qualifications for vocational assignment. These interviews culminate in an agreement between the students and their co-ordinators regarding the field of co-operative work in which the students are placed. During each of the terms at college immediately succeeding a term at co-operative work, the co-ordinator confers with the student concerning the job experiences acquired and other matters relating to vocational adjustment or personal problems while on the job. The reports of the employer on the achievements and performance of the student are discussed and interpreted in the interest of further co-ordination and more effective learning. In this way the progress of all students is observed and co-ordinated with their college work to the end that maximum values are obtained from their training at Northeastern.

Placement

The co-ordinator visits co-operating firms and arranges with them for the employment of students under his charge. The range of opportunities available to Northeastern students is wide, including practically all phases of industrial life. In general, the first year of co-operative work can be expected to be of a routine nature through which students may prove their fitness for more responsible work. A job assignment directly related to the student's field of study and vocational training is the prime objective of the co-ordinator. The jobs upon which Northeastern students are employed are in no sense protected opportunities. They are regular jobs under actual business conditions and are held in competition with other sources of supply. The only special privilege accorded Northeastern students is that of attending college on the Co-operative Plan and the opportunity to merit by superior performance progressive advancement on the job.

Supervision and Guidance

While the University does not adopt a paternal attitude toward co-operative work, it nevertheless assumes certain responsibilities toward students and co-operating firms. Co-ordinators visit each job in order that the employer may report upon the student's achievement and that necessary adjustments may be made. Co-ordinators supervise the assignment of students to various jobs and in conjunction with employers arrange for promotions and progressive training schedules. Problems that arise on co-operative work are adjusted by common agreement of co-ordinator, student, and employer. In the event of special difficulties or dissatisfaction, the case may be adjusted by the Committee on Co-operative Work, which comprises several members of the faculty.

Through a series of co-operative work reports prepared during their working periods, students are led to analyze their jobs and to develop a thoughtful and investigative attitude toward their working environment. A most important phase of co-operative work is the opportunity afforded for guidance by the frank discussion of actual problems en-

countered on the job. The intimate contact between co-ordinator and student is of great worth in helping the student to get the most value from the co-operative work assignment. While the University endeavors to provide every possible opportunity for its students, it expects them at the same time to take the initiative and to assume the responsibility involved in their individual development. To every student are available the counsel and guidance of the faculty, and every resource at its disposal. But the faculty does not coerce students who are uninterested or unwilling to think for themselves.

The Co-operative Plan is thus designed specifically to provide actual working opportunities which afford the students practical experience, give meaning to their program of study, and train them in reliability, efficiency, and teamwork.

Correlation of Theory and Practice

Co-operating companies employ the students, both men and women, in the various departments of their establishments. The training is thorough. To derive the greatest value from co-operative work the student is advised to continue in the employ of the co-operating firm for at least one year after graduation, since certain types of work which would afford valuable experience cannot be made available during the alternating period of work and study. Statistics compiled over a period of many years show that an average of from thirty-five to fifty per cent of each graduating class remains with co-operating employers after graduation.

Co-operative Work Reports

The values to be derived from practical experience are further enhanced by required report writing. These co-operative work reports are written during the working periods by all co-operative students. A complete job analysis is required as the first report written on any new co-operative work assignment. Subjects of other reports are selected by the student after conference with the Co-ordinator of Co-operative Work, by whom they must be approved. The reports are designed to encourage observation and investigation on the part of the students and to help them to appreciate more fully the extent and value of their experience.

Co-operating employers are particularly interested in reading these reports before they are submitted to the co-ordinators. This affords an unusual opportunity for the student to place himself directly before top management and have his ideas and accomplishments evaluated periodically. These reports are carefully read by the co-ordinator and are discussed with the student during the following college period. Exceptionally valuable results are obtained from these reports. The value derived must necessarily be directly proportional to the conscientious and intelligent concentration of effort by the student upon this phase of the work.

Co-operative Work Records

Complete and detailed records are kept of the co-operative work of each student. They are based upon reports made by the employer at the

end of each working period, upon occasional personal conferences between the employer and the co-ordinator, and upon various evidences of the student's attitude toward all the phases of his co-operative work. It is not possible for the student to secure a degree unless this part of the curriculum is completed satisfactorily. These records of practical experience serve as a valuable reference for future Alumni Placement.

Positions Available

Because of uncertainties of business conditions, as well as other reasons beyond its control, the University cannot and does not guarantee to place students. However, past experience has demonstrated that students who are willing and capable of adapting themselves to existing conditions are almost never without employment except in periods of severe industrial depression.

Earnings

It should be understood that the primary purpose of the Co-operative Plan is training. The rates of pay for students tend to be lower than might reasonably be expected on full-time productive types of jobs such as would ordinarily be available to youth of corresponding age and training, because students are given the privilege of attending college on the Co-operative Plan and because the purpose is to provide the student with the opportunity of advancing on the job concurrently with his academic progress. Frequently this involves transfer, at reasonable intervals, from one department to another of the co-operating company.

Location of Work

It is the policy of the University to assign students to co-operative work within commuting distance of their homes. This is not always possible, however, and at times it may be necessary for students to live away from home in order to obtain satisfactory and desirable co-operative work assignments.

Types of Co-operative Work

In so far as possible students are placed at co-operative work in that general field for which they express preference, provided that aptitude, physical ability, temperament, and other personal qualities appear to fit them for this field. Usually students are placed first in those jobs of an organization where they may learn the fundamental requirements of the business.

For example, the first year of a training program in a manufacturing establishment might be as an operator of machines. This provides the opportunity to acquire intimate knowledge of the equipment, methods, and operations of some of the processing departments of raw materials and products in process of manufacture. The second year might be as an expeditor or on assignments with the maintenance and installation department. Such work would require contact with all of the several production and operating departments of the plant and would provide the opportunity for a comprehensive and correlated study of all operations,

plant layout, routing of raw, semi-processed, and finished materials — in other words, a perspective view of the interrelationship of departments. By this time, the student will have progressed to the academic stage where "application" courses will be included in the program and the next year of co-operative work might be devoted to testing, inspecting, methods analysis or the like. The last year would be devoted to initial training in that department for which the student was aiming ultimately to qualify. Thus, in the course of a period of four years of co-operative training, the student would have the opportunity to acquire a substantial background in at least some of the functions of the factory administration. This progressive type of training is ordinarily obtained in the employ of one company. A change of company each year usually provides more a change of environment than a progression of experiences.

All types of enterprises employ Northeastern co-operative students. The limitation is determined by the interests and career objectives of the students enrolled at the time. They include engineering firms, manufacturing companies, public utilities, banks, railroads, insurance companies, wholesaling and retailing outlets, hospitals, social agencies, publishers and advertising houses, libraries, development and research organizations, etc. Definite training schedules have been established with several of the co-operating companies. The ultimate objective of such schedules is absorption of the graduates into the permanent employ of the company, although such absorption is based on merit rather than guarantee.

General Information

College Expenses

Tuition and Fees

Freshmen — The charge for tuition, including the University Activities Fee, for all freshmen is \$450, payable as indicated in the schedule below.

Upperclassmen — The charge for tuition, including the University Activities Fee, for all upperclassmen on the Co-operative Plan is \$450.

Schedule of Tuition and Fee Payments, 1950-1951

FOR FRESHMEN

DIVISION S		Tuition and Fee	DIVISION N	
September 6, 1950.....		\$150.....	November 15, 1950	
November 20, 1950.....		150.....	January 29, 1951	
January 29, 1951.....		150.....	April 9, 1951	

FOR UPPERCLASSMEN (Co-operative Plan)

DIVISION A		Tuition and Fee	DIVISION B	
September 11, 1950.....		\$180.....	November 20, 1950	
January 29, 1951.....		180.....	April 9, 1951	
August 6, 1951.....		90.....	June 18, 1951	

FOR UPPERCLASSMEN

(Full-time Plan for Preprofessional Students in Liberal Arts only)

*Tuition and
Fee**

September 11, 1950.....	\$180
November 20, 1950.....	180
January 29, 1951.....	180

*These payments cover three ten-week terms of instruction. Students who elect to continue for a fourth term pay an additional \$180 on April 9, 1951.

University Activities Fee

The University Activities Fee is included in tuition and is used for the operation of an extracurricular University program so designed as to meet in the best possible manner the recreational, health, social and cultural needs of the students. This fee supports such activities as dramatics, musical clubs, the Student Union, intramural games and sports, and intercollegiate athletics; includes membership in the Northeastern University Athletic Association and subscription to the *Northeastern News*, the college newspaper. Seniors receive a copy of the yearbook called the *Cauldron*, which is financed in part under this fee.

The University Activities Fee also covers the services of the college physician for emergency attention and general medical advice. Minor ailments are treated by the college health officers without additional charge. Any student who shows signs of more serious illness is immediately advised to consult a specialist or return home in order to receive further treatment.

Accident and Sickness Insurance

An excellent low cost accident and illness insurance covering "in-hospital" care is available to all Northeastern University students through a group insurance plan managed by Higham, Neilson, Whitridge, and Reid, Inc., of Boston. The cost of this insurance is \$12 for the calendar year, payable in advance. Students living away from home are required to participate in the plan; commuters may do so if they wish. Circulars giving details of the insurance coverage will be sent to all candidates at the time their applications for admission to the University are accepted.

Chemical Laboratory Deposit

*(Applies only to students taking chemistry and chemical
engineering laboratory work)*

Freshmen taking chemistry make a Chemical Laboratory deposit of fifteen dollars (\$15) at the beginning of the year from which deductions are made for breakage, chemicals, and destruction of apparatus in the laboratory.

Upperclassmen taking chemistry or chemical engineering laboratory work make deposits at the beginning of each such term as follows:

Sophomores and Middlers.....	\$10
Juniors.....	20
Seniors.....	15

Any unused portion of this deposit will be returned to the student at the end of the college year. If the charge for such breakage, chemicals, or destruction of apparatus is more than the sum deposited, the student will be charged the additional amount.

Deferred Payment Fee

There will be a \$2.00 deferred payment fee added to all bills which are not paid by the Saturday following the date on which payments fall due. When further extensions of time are given on payments which have been previously deferred, an additional \$2.00 fee may be charged for each extension.

Failure to make the required payments on time, or to arrange for such payments, is considered sufficient cause to bar the student from classes or suspend him from co-operative work until the matter has been adjusted with the Registrar.

Late Registration Fee

A fee of \$5.00 will be charged for failure to register in accordance with prescribed regulations on the dates specified in the college registration bulletins.

Graduation Fee

A fee of fifteen dollars (\$15) covering graduation is required by the University of all candidates for a degree. This fee must be paid before the end of the seventh week of the second term in the senior year.

Payments

All payments should be made at the Central Office which is located on the first floor of Richards Hall. Checks should be made payable to Northeastern University.

Refunds

The University provides all instruction and accommodations on an academic term basis; therefore, *no refunds are granted except in cases where students are compelled to withdraw on account of personal illness.*

Expenses

The following tables, compiled from expense returns submitted by the student body, give an idea of freshman expenditures under ordinary conditions.

Estimated College Expenses for a Freshman

Application Fee.....	\$ 5.00
Tuition and Fees.....	450.00
Chemical Laboratory Deposit.....	15.00
Books and Supplies.....	55.00
Accident and Sickness Insurance (optional for commuters) . .	12.00
	<hr/>
	\$537.00

(Engineering students should add approximately \$50 for drawing instruments and equipment.)

*Estimated Living Expenses Per Week for a Freshman
Residing Away from Home*

Room Rent.....	\$ 6.00- 7.00
Board.....	12.00-16.00
Laundry.....	3.00
Incidentals.....	2.00
	<hr/>
	\$23.00-28.00

The figures given above are approximate and may not exactly apply to any one student; however, they will be found to represent fairly well the expense of a freshman who lives comfortably but without extravagance.

Policy on Changes of Program

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

The University further reserves the right to change the requirements for graduation, tuition and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes which may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

Textbooks and Supplies

The Northeastern University Bookstore, located in the basement of Richards Hall, is a department of the University and is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the University may be purchased at the Bookstore.

All students may purchase Day College required textbooks which are for their own use at a ten per cent discount. The ten per cent discount will not apply on equipment, supplies, or novelties. It is the policy of the Bookstore, however, to stock these materials and to sell them at the lowest possible prices.

Part-time Work

Students who find it necessary to accept part-time jobs while attending college may obtain such work through the Director of Co-operative Work.

Students are not justified in assuming that the University will take care of their expenses or guarantee to supply them with work sufficient to meet all their needs.

A student should have available a reserve fund adequate to provide for immediate needs and unexpected contingencies. This should ordinarily amount to at least the first year's tuition plus books and supplies, room rent, and board for several weeks or a total of about \$600.

Grades and Examinations

Examinations

Examinations covering the work of the term are usually held at the close of each term. Exceptions may be made in certain courses where, in the opinion of the instructor, and with the approval of the Dean of the College concerned, examinations are not necessary.

Condition Examinations

Condition examinations are usually given once each year for each division. The charge is three dollars (\$3.00) for each condition examination.

A student must petition to take a condition examination at least three weeks in advance of the week in which the examination is to be given.

The responsibility for the removal of a condition rests with the student, who is required to ascertain when and how the condition can be removed.

Senior Condition Examinations

No condition examinations in last term senior courses are offered at the end of the last term. This means that a failure in a last term senior course cannot be made up before Commencement.

Grades

A student's grade is officially recorded by letters, as follows:

- A superior attainment
- B above average attainment
- C average attainment
- D lowest passing grade, poor attainment (the faculty will accept only a limited amount of grade D work toward the Bachelor's degree)
- F failure, removable by condition examination
- FF complete failure, course must be repeated in class
- I incomplete, used for intermediate grades only to signify that the student has not had time to make up work lost through excusable enforced absence from class
- L used in all cases of the removal of a failure by condition examination or by attendance at summer term.
- WP Withdrew from course — passing.
- WF Withdrew from course — failing.

A student who does not remove a condition before that course is again scheduled, a year later, must repeat the course unless excused by special action of the Executive Committee. A condition in more than one subject may involve the loss of assignment to co-operative work.

The responsibility for the removal of a condition rests with the student who is required to ascertain when and how the condition can be removed.

Dean's List

A Dean's List, issued at the end of each term, contains the names of upperclass students who have a 3.0 weighted average in all subjects with no grade below C during the preceding period. Freshmen who meet the same standards in their work are included on a Freshman Honor List. No student under disciplinary restrictions is eligible for either list.

Reports on Scholastic Standing

Reports for all students are issued at the end of each grading period. Questions relative to grades are to be discussed with the student's faculty adviser.

Students are constantly encouraged to maintain an acceptable quality of college work. Parents and students are always welcomed by the college officers and faculty advisers for conference upon such matters.

Parents or guardians will be notified whenever students are advised or required to withdraw from the University. If parents so request, report cards will be sent to them instead of to the student.

General Conduct

Conduct

It is assumed that students come to the University for a serious purpose and that they will cheerfully conform to such regulations as may from time to time be made. In case of injury to any building or to any of the furniture, apparatus, or other property of the University, the damage will be charged to the student or students known to be immediately concerned; but if the persons who caused the damage are unknown, the cost for repairs may be assessed equally upon all the students of the University.

Students are expected to observe the accepted rules of decorum, to obey the regulations of the University, and to pay due respect to its officers. Conduct inconsistent with the general good order of the University or persistent neglect of work may be followed by dismissal; if the offense be a less serious one, the student may be placed upon probation. The student so placed upon probation may be dismissed if guilty of any further offense.

It is desired to administer the discipline of the University so as to maintain a high standard of integrity and a scrupulous regard for truth. The attempt of any student to present any work which he or she has not performed, or to pass any examination by improper means, is regarded as a most serious offense and renders the offender liable to immediate expulsion. The aiding and abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Scholastic Year for Seniors

Seniors of either division who are candidates for a degree in the current year must have completed all academic work, class assignments, theses, regular and special examinations, before twelve o'clock noon of the Saturday next following the close of recitations for seniors.

Attendance

Students are expected to attend all exercises in the subjects they are studying unless excused in advance.

No cuts are allowed. A careful record of each student's attendance upon class exercises is kept. Absence from regularly scheduled exercises in any subject will seriously affect the standing of the student. It may cause the removal of the subject or subjects from a schedule.

Laboratory work can be made up only when it is possible to do so during hours of regularly scheduled instruction.

Absences from exercises immediately preceding or following a recess are especially serious and entail severe penalties.

Attendance at all mass meetings of the student body is compulsory. Exceptions to this rule are made only when the student has received permission from the Director of Student Activities previous to the meeting from which absence is desired.

Student Housing

For Men

At present the University does not maintain dormitories and cannot guarantee housing accommodations to students who live away from home. Provision, however, is made to help students secure rooms in the vicinity. Many freshmen prefer to take room and board at the fraternity houses, which are all supervised by the University through faculty advisers. For information relative to such housing write the Director of Admissions.

Rooms in the dormitory of the Huntington Avenue Branch of the Boston Y.M.C.A. may be secured only through the Housing Department of the Y.M.C.A. The applicant must present himself in person to a representative of the Department before assignment will be made.

Applicants desiring to room in the Association dormitory are advised to write the Housing Department of the Huntington Avenue Branch, 316 Huntington Avenue, Boston, Massachusetts.

For Women

Although Northeastern University does not at present have its own dormitories, arrangements have been made to reserve a section of the New England Conservatory dormitories for Northeastern girls. The residence is conveniently located within a five-minute walk of the University Center.

The regulations and supervision, including medical care, are the same as for the Conservatory students. Arrangements are made direct with the New England Conservatory; housing applications are sent to accepted candidates.

A few rooms are available at \$194 for the academic year, but the majority are \$242, \$291, or \$339.

Housing Regulations

The University endeavors to exercise due consideration and care for the student's welfare while he is in residence. This necessitates the adoption of the rules and regulations presented herewith.

1. The Registrar's Office will endeavor to assist students in obtaining suitable housing. Whenever possible a student should try to make arrangements for housing several days in advance of registration.

2. Students may inspect rooms suggested to them before definitely renting them. After a student has decided to take a room obtained through the assistance of the Registrar's Office, he must notify that office as soon as possible.

3. All students who are assisted in finding rooms by the Registrar's Office must retain the room for the period of their residence unless prior permission to change has been granted by the Registrar.

4. Students are not permitted to live in unsupervised quarters. Under no conditions are groups of students permitted to lease apartments or houses.

5. Students are not permitted to engage living quarters without prior approval of the Registrar. Those violating this rule will be required to give up such rooms immediately and will be assisted by the Registrar's Office in obtaining approved quarters.

Veterans at Northeastern University

Northeastern University is offering full co-operation in the educational program for veterans and all its resources have been made available for this purpose. Veterans who attend Northeastern are not segregated from the rest of the student body nor in any way treated as a special group. This applies equally to veterans whose college expenses are being met by the Government with the natural exception that administrative details vary for this group.

All veterans are given every possible consideration in the readjustments they are experiencing in their return to normal civilian life. Returning veterans are welcome as individuals and their programs determined on the basis of previous educational background, experience, and employment objective. All University programs are open to qualified veterans. Returning servicemen are also urged to take part in all sports, class, and extracurricular activities in order that they may participate in the full range of a normal well-rounded university life.

The Department of Admissions determines each applicant's potentialities for profiting from higher education. Once a veteran has been admitted to the University his progress is watched and aided by the regular University advisory system. In addition, the University has established a Veterans Office which handles all relations between matriculated veterans and the Veterans Administration.

Freshman Counseling

Freshman Orientation Period

In order that freshmen may be ready to pursue their academic work with greater composure and be somewhat acclimated before the beginning of scholastic work, three or four days prior to the first term are devoted to a freshman orientation period. All freshmen are required to attend all exercises at the University scheduled during the orientation period.

Freshman Orientation Class

All freshmen attend an orientation class once each week for the first twenty weeks. This class is designed to instruct the student in the traditions, activities, and procedures of the University. Time is devoted to the proper methods of study for success in college and stress is placed on attitudes for success in later life. About a third of the classes are devoted to techniques and procedures of work under the Co-operative Plan.

Physical Examination

All freshmen receive a physical examination at the University during the orientation period. All students are expected to report promptly at the appointed time for examination. Those who fail to appear at the appointed time will be charged a special examination fee of two dollars (\$2.00).

Freshman Counselors

At the time of matriculation each freshman is assigned to a personal adviser, a member of the faculty, who serves as an interested and friendly counselor during the perplexing period of transition from school to college. The aim of the freshman advisory system is primarily to guide students through their first year. General counseling is under the direction of the Dean of Students, assisted by a clinical psychologist, who handles the diagnosis and remedial treatment of difficult problem cases. Direct counseling of women students is under the supervision of a woman member of the staff with the title, Adviser for Women Students.

Individual Attention to Freshmen

Attention is given not only to the scholastic problems of the student, but also to personal problems in which advice is needed and desired. The aim is to help the student to the fullest possible personal development.

The college records of all students are periodically analyzed in the light of what may reasonably be expected from them in view of their previous school record, their scores on psychological tests, and all other factors in their situations. If they are not doing their best work, investigations are made to determine and eliminate the causes.

Educational Guidance

The Dean of Students Office is prepared through its testing and general information facilities to provide guidance for students who are uncertain about their educational objectives. While the service is restricted to students registered at the University, it is available throughout the academic year to any regularly enrolled student who applies for it.

Scholarships, Prizes, and Awards

Trustee Scholarships

Established in 1928 by the Board of Trustees of Northeastern University. Each year the University grants in the three Day Colleges full and partial tuition scholarships to entering freshmen who have demonstrated throughout their preparatory or high school course superior scholastic attainment. For additional information relative to these scholarships, communicate with the Director of Admissions.

Charles Hayden Memorial Scholarships at Northeastern University

The Charles Hayden Foundation, created by the will of the late Charles Hayden, an alumnus of the Boston English High School, offers annually memorial scholarships to freshmen at Northeastern University. The scholarships are awarded to "deserving boys" whose parents are unable to finance the entire cost of their education. To be eligible for consideration a student must have graduated from the English High School or from one of the following high schools in Boston and its metropolitan area: Arlington, Belmont, Boston (Brighton, Charlestown, Commerce, Dorchester, East Boston, English, Hyde Park, Jamaica Plain, Boston Technical, Public Latin, Roslindale, Roxbury Memorial, South Boston), Braintree, Brookline, Cambridge (High and Latin, Rindge Technical), Canton, Chelsea, Dedham, Everett, Lexington, Malden, Medford, Melrose, Milton, Needham, Newton, North Quincy, Quincy, Revere, Somerville, Stoneham, Wakefield, Waltham, Watertown, Wellesley, Weston, Weymouth, Winchester, Winthrop. Full particulars concerning these scholarships may be obtained from the Director of Admissions of Northeastern University.

Dean's List Scholarships

Established in 1929. Annually at the Dean's List Dinner three scholarships of one hundred dollars each, known as the Dean's List Scholarships, are presented to the students with the outstanding records in the sophomore, middler, and junior classes. These scholarships are applicable to the recipients' tuition the first term of the following year.

President's Letter

Established in 1929. At the time of the award of the Dean's List Scholarships a President's Letter is presented to the senior student who leads the seniors in the Day Colleges in scholastic achievement. The letter is a congratulatory one from the President of the University and is a coveted prize.

Sears B. Condit Honor Awards

Established in 1940 through the generosity of Sears B. Condit. In the fall of the year at a University convocation Sears B. Condit Honor Awards, not less than ten in number, are awarded to outstanding students in the upper three classes of the College of Liberal Arts, the College of Business Administration, and the College of Engineering. Students who have received the Dean's List Scholarships are not eligible for one of these Honor Awards. Each award carries a stipend of not less than one hundred dollars as well as a certificate of achievement.

Boston Society of Civil Engineers Scholarship in Memory of Desmond FitzGerald

Established in 1931 by the Boston Society of Civil Engineers in memory of Desmond FitzGerald, a former president of the Society and an eminent hydraulic engineer with a distinguished record of service. The scholarship is subject to annual renewal. It has been awarded annually since 1931 to an outstanding Northeastern University senior or junior student in the Department of Civil Engineering of the College of Engineering. The presentation is made by the President of the Boston Society of Civil Engineers at a College of Engineering convocation in the spring of the year.

Tau Beta Pi Award

Massachusetts Epsilon Chapter of Tau Beta Pi Association, national honorary society in engineering, offers annually a scholarship of one hundred dollars to the sophomore in the College of Engineering who, during the previous year as a freshman, made the highest scholastic record.

The Sigma Society Award

The Sigma Society, the honorary society of the College of Business Administration, offers annually a scholarship of one hundred dollars to the sophomore in the College of Business Administration who, during the previous year as a freshman, made the highest scholastic record.

The Academy Award

The Academy, the honor society of the College of Liberal Arts, offers annually a scholarship of one hundred dollars to the sophomore in the College of Liberal Arts who, during the previous year as a freshman, made the highest scholastic record.

Omega Sigma Award

The Omega Sigma Society, composed of women students at Northeastern University, offers annually a scholarship of one hundred dollars to the woman student who, by high scholastic attainment and by demonstration of the quality of leadership, has proven herself the outstanding woman student of the year.

Henry B. Alvord Memorial Scholarship in Civil Engineering

Established in 1940 in memory of the late Henry B. Alvord, Professor of Civil Engineering and Chairman of the Department for eighteen years. The award is made annually to a student graduating from an accredited secondary school who has demonstrated superior academic ability and gives promise of succeeding in civil engineering. The grant of two hundred and fifty dollars is made only to an entering freshman who is qualified for and plans to study civil engineering.

William J. Alcott Memorial Award

Established in 1934 by members of the faculty and other friends to perpetuate the memory of William Jefferson Alcott, Jr., a brilliant member of the Department of Mathematics in Northeastern University from 1924 until his death in 1933. The award is made annually from the income of the fund for outstanding scholastic achievement during the preceding year, either in a particular field of interest or for a superior academic record.

Public Speaking Contest

Established in 1922. Each spring the University conducts a Public Speaking Contest for which all students in the Day Colleges are eligible. Prizes of forty, thirty, twenty, and ten dollars respectively are awarded to the four winning speakers in a contest before the upperclass student body assembled in a general mass meeting. Speeches are original in nature and about ten minutes in length. The judges base their decision on appropriateness of subject, content, and delivery. Preliminary contests are held during the winter in each division.

Clara and Joseph F. Ford Scholarship Fund

Established in 1947 by friends and employees of Clara and Joseph F. Ford to provide tuition scholarships for worthy, needy, and well-qualified students who have demonstrated a democratic and tolerant spirit and who are well disposed toward people of all creeds and races.

Alumni Award for Professional Promise

Established in 1947 by the Alumni Association of the Day Colleges. This award is presented annually at a University Convocation sponsored by the Alumni of the Day Colleges. The award is made to an outstanding senior who has demonstrated unusual professional promise through his character traits, scholastic achievement, and co-operative work performance.

William Lincoln Smith Scholarship Fund

Established in 1947 by Farnham Wheeler Smith, Class of 1924, Benjamin Lincoln Smith, Class of 1923, Thomas Hollis, Jr., Class of 1941, and other members of the family in honor of Dr. William Lincoln Smith who served long, faithfully, and with distinction as chairman of the Department of Electrical Engineering at Northeastern University. The income from the fund is to be used for an annual scholarship award to a student enrolled in the Department of Electrical Engineering who has demonstrated excellence in some aspect of electrical research or who stands high in his courses or who otherwise exhibits promise of future competence in the field. The award shall preferably be granted to a student who needs financial assistance to continue his college work.

Jewish Vocational Aid Society

The Jewish Vocational Aid Society has established a \$1,000 revolving scholarship loan fund at Northeastern University to be available to upperclass students in the Colleges of Engineering, Liberal Arts, or Business Administration provided the students are taking work which has an acceptable vocational objective. It is possible for a student to receive a scholarship loan up to but not exceeding \$150 in a semester. Students desiring to receive help from this fund should come to the Dean of Students' office, 275R, for further information.

Associated Industries of Massachusetts Scholarships

The Associated Industries of Massachusetts annually awards to Northeastern University several thousands of dollars to be used for scholarships to help sons and daughters of workers in Massachusetts industries who are enrolled in the Day Colleges. The amount of each individual award is determined by a committee comprising the Dean of Students, the Director of Day Colleges, and the Director of Admissions. Primary purpose of the grant is to assist capable students who would otherwise be unable to continue their college education. The scholarships are available to both freshmen and upperclassmen.

The Alumni Association

The 7000 alumni of the Day Colleges are organized to promote the welfare of Northeastern University and to perpetuate the spirit of fellowship among members of the Alumni Association. Headquarters of

the Association are in the Alumni Office located in Room 251 of Richards Hall where complete records and addresses of alumni are on file.

The official publication is the *Northeastern Alumnus* which is published quarterly and is sent to all subscribers to the annual Alumni Fund. The Alumni Fund operates similar to the Community Chest. Once each year the alumni are solicited through the Alumni Association. The funds are used to provide an annual gift to the University, finance the activities of the Alumni Association, and publish the *Alumnus*.

Regional Alumni Clubs have been established in Brockton, Chicago, Connecticut, Maine, New York, Merrimac Valley, North Shore, Philadelphia, South Shore, Washington, Western Massachusetts, and Worcester. These clubs meet periodically in their respective centers to discuss matters pertaining to the University and its alumni. Meetings are also held in conjunction with the visits of Northeastern athletic teams to the various club centers.

In addition the Association sponsors the Omega Sigma Alumnae, for the Co-ed graduates, and the Varsity Club for alumni interested in athletics. The Varsity Club in turn sponsors the Fall Home Coming Day and Dinner held in conjunction with a football game. At the dinner the Alumni Track Trophy and Varsity Football Trophy are awarded.

The Association presents annually, at the Alumni Convocation, the Alumni Award for professional promise, listed above.

The climax of the year's activities is the Alumni Federation Day held in conjunction with the June Commencement. Reunions of various classes are also conducted during Commencement week-end.

The Alumni Association of the Day Colleges is a member of the Alumni Federation, which consists of the Alumni Associations of the Day Colleges, of the School of Business, and of the School of Law.

The organization of the Alumni Association is as follows:

Officers

President

HOWARD C. COOKINGHAM '34

Secretary

EDWARD V. KIRKLAND '35

Vice-President

BERNARD H. CAPEN '20

Treasurer

JOHN E. VADALA '31

Executive Committee

JOSEPH M. CHRUSZ '37

CHARLES E. HILLS, JR. '21

CHARLES E. RICE '35

WILLIAM W. ROBINSON '42

GUSTAV ROOK '39

LEONARD F. COLPITTS '32

Director of Alumni Relations

RUDOLF O. OBERG '26

Assistant Director

GEORGE A. SPEERS '49

*Class Representatives*ALBERT E. JOHNSON '32, *Chairman, Alumni Council*

1917	PERRY F. ZWISLER	1936	JOSEPH P. DRISCOLL
1920	GEORGE A. MALLION	1937	RICHARD B. STAPLES
1921	FRANK A. CUNDARI	1938	RAY F. HENDERSON
1922	ARTHUR E. HARDING	1939	ROBERT J. FIELDING, JR.
1923	PERCY T. BUTTERWORTH	1940	JOHN E. FITZGIBBONS
1924	ARTHUR W. FERGUSON	1941	MAURICE KATZ
1925	WILBERT H. CONNOR	1942	EDWARD C. BARMAKIAN
1926	CARL A. WOLFRUM	1943	IRVING T. BERKLAND
1927	LAURENCE R. CLARKE	1944	THOMAS F. MAHONEY
1928	DOMINIC MEO, JR.	1945	MERLE I. LOCKE
1929	V. GEORGE OHANESIAN	1946	KENNETH E. PALMER
1930	DANIEL F. O'LEARY	1947	RODERICK V. WOODBURY
1931	VERNON S. MCFARLIN	1948	ALFRED J. PACELLI
1932	ALBERT E. JOHNSON	1949	EVELYN F. GRIFFIN
1934	HARLAN P. NEWTON	1950A	DAVID ABBOTT
1935	JAMES F. DENTON	1950C	HARRY J. SHALVARJIAN

NORTHEASTERN UNIVERSITY

COLLEGE OF LIBERAL ARTS

Admission Requirements and Courses of Study

1950-1951



(COEDUCATIONAL)

BOSTON 15, MASSACHUSETTS
JANUARY, 1950

THE COLLEGE OF LIBERAL ARTS

Aims

IN PROVIDING the means to a modern liberal education the College of Liberal Arts of Northeastern University has a threefold objective: first, the development of intellectual capability; second, the development of a well-rounded personality; and third, preparation for a vocation.

Intellectual capability rests upon the foundation of a sound general education. Through the required and elective courses of all curricula, students are guided toward a mastery of the leading ideas, significant facts, and the habits of thought and methods of work in the areas of language, natural science, social science, and the humanities. With this training the student will better understand the world and society in which he lives, appreciate more fully the basic values upon which civilization and culture rest, and perceive and accept his responsibilities as an active participant in social groups—the family, the community, the nation and the world. At the same time the student is aided in the development of a resourceful and independent mind, the ability to use as well as to accumulate knowledge, and the awareness of his mental strengths and weaknesses.

The College of Liberal Arts endeavors to aid each student in attaining the goal of an emotionally balanced, well-rounded personality. Through its academic, extracurricular, and co-operative work programs, students are provided experiences which will be conducive to the development of strength of character and a sense of personal responsibility—including such personal qualities as self-reliance, integrity, perseverance, and the ability to work with others.

Since liberal arts colleges were originally established for the purpose of training for certain professions, the College of Liberal Arts holds that there is no inconsistency between a truly liberal education and preparation for a vocation. Today it is widely accepted that a liberal education must prepare both for the art of living and the obtaining of a living. Through its academic program coupled with co-operative work experience the College of Liberal Arts aims at providing young men and women with a sound training either for further graduate study or for immediate entrance upon graduation into some vocation.

Methods

To enable each student to plan a college program in keeping with his own interests and aptitudes, a wide range of electives is offered. This does not mean that students are free to elect courses indiscriminately, for if they are to obtain a liberal education they must have training in

several basic fields. Therefore, a definite series of basic courses in each curriculum is required by the faculty. These required courses are largely concentrated in the first two years of the curriculum.

Through a comprehensive guidance program students are directed in their selection of courses so that they obtain the proper preparation for their intended vocations. Specialization in a major field is emphasized during the latter part of the curriculum and is facilitated by the opportunity for electing certain courses in the College of Engineering and the College of Business Administration.

Through the Northeastern plan of co-operative education for upper-classmen, the student makes early contact with actual working conditions and profits by the wholesome experience of earning at least part of the money to defray college expenses. Viewed as a whole, then, the college years surround the student not with an artificial atmosphere of cloistered scholarship but with an environment very close to that which he or she will enter after graduation, and thus tend to make for more ready employment, an essential element of vocational competence.

Evening Courses

In order to provide employed men and women with opportunities in liberal arts education, a number of the regular courses are offered during the evening. These courses are designed for three groups of young men and women who are secondary school graduates and qualified for entrance to the college: (1) those who wish to prepare for admission to the School of Law, (2) those who wish to pursue a cultural program leading to the degree of Associate in Arts, (3) those who do not wish to follow a specific program but desire to take courses to improve their cultural background.

The evening courses are arranged in a three-year program which meets one-half the credit hour requirement for the A.B. or S.B. degree and leads to the degree of Associate in Arts.

Preparation for a Career

The curricula in the College of Liberal Arts afford not only a broad cultural training but also the necessary foundation for a wide range of vocations for both young men and young women. Some of the career opportunities open to the graduates of the College of Liberal Arts together with the academic programs needed are indicated below and in the pages which follow.

Business—The value of a liberal arts preparation for a business career is clearly shown by the fact that a very large proportion of all graduates of liberal arts colleges enter business. Within recent years there has arisen an increasing demand for liberal arts graduates by the largest and most progressive corporations in the country. For their training programs in manufacturing, merchandising, selling, and other fields many companies are seeking adaptable young men and women with the breadth of background of a liberal arts education.

Students planning either to go to a graduate school of business administration or to enter business directly upon graduation should major in economics and should elect courses in English, government and psychology. A limited number of specialized courses in the College of Business Administration such as advertising, business law, finance, industrial management, insurance, investments, marketing, and merchandising may be taken by students who have had the necessary prerequisites.

Biological Sciences—Students who major in biology can arrange programs which will lay the foundation for the following careers: teaching, dentistry, medicine (see premedical curriculum), veterinary medicine, public health, sanitation and laboratory methods; research in biology with universities, private research institutions, and governmental agencies under state and federal control; agriculture; and professional work in zoology and its applied fields such as fisheries, animal husbandry, and biology survey. Graduate study is essential for most of these careers.

Chemistry—Chemistry is rapidly approaching the status of a profession as shown by the action of the American Chemical Society in laying down specifications for approved undergraduate training in chemistry. Students who choose a chemistry major at Northeastern, a program accredited by the American Chemical Society, will be prepared upon graduation to become junior chemists in industrial, commercial, or governmental chemistry laboratories. The same program provides a thorough foundation for graduate study in chemistry.

Dentistry—The minimum requirement for admission to dental schools is two years of preliminary study in an approved college. Since the requirements of individual dental schools vary, students should familiarize themselves with the specific requirements of the schools in which they are interested. For most dental schools a candidate for admission must offer at least one year of work in English, physics, and biology, and one and one-half years of work in chemistry including organic chemistry.

Predental students at Northeastern will be able to meet these requirements by taking the two-year predental program. A third year may be taken by those students who desire to obtain a broader educational background.

Government Service—Government service is a very comprehensive term since the numerous activities of modern government require all types of trained workers. For more and more of these positions a college education is essential as shown by the fact that only college graduates are eligible to take many civil service examinations in such fields as biology, business analysis, economics, editing, examinations (for majors in psychology), fiscal analysis, mathematics, physics, social work, sociology, and statistics.

The distinctive governmental career field is that of public administration since the need for college trained personnel in administrative governmental posts of all types, political or nonpolitical, is being increasingly recognized. While graduate training is desirable, an undergraduate

program with a major in history-government and a minor in economics will provide the necessary foundation for a career in government service at home or abroad.

Journalism—Many of the nation's leading editors now advise students preparing for a career in journalism to obtain a broad liberal arts education rather than to concentrate on specific training in the routines of journalism in their undergraduate programs. It should be observed that opportunities in journalism today are not restricted to the urban or rural newspaper fields. Publishing houses, trade journals, house organs, advertising departments and agencies, and the various types of public relations work need college graduates with the same basic training.

Students who desire to enter journalism should choose the English-journalism major with a minor in economics, history, or government. They may elect courses in advertising in the College of Business Administration.

Law—Effective September 1, 1938, by a ruling of the Supreme Judicial Court of Massachusetts, in order to be eligible for admission to the bar an applicant must have completed certain general educational requirements before beginning a legal education. Briefly, this general education must comprise graduation from a four-year high school and the completion of not less than half of the work accepted for the Bachelor's degree in a college approved by the Board of Bar Examiners.

The College of Liberal Arts offers two programs of prelegal study designed to meet the above requirements. One of these programs is specifically adapted to the needs of full-time day students. This program enables the student to meet one-half the requirements for the Bachelor's degree in two years of full-time study. It provides the basic background in English, economics, government, and history recommended for the prospective student of law.

The other prelegal program is designed to meet the needs of employed men and women. It is provided by offering a number of the regular courses during the evening and requires three years for completion.

Law—Liberal Arts (Combined Program)—See page 68.

Library Work—Professional training for library work now demands at least one year of graduate study in a library school following a broad undergraduate foundation in liberal arts. While a major in English is usually advised, many opportunities are available for those who have concentrated in other fields.

Mathematics — A recent bulletin of the United States Department of Labor lists the following occupational titles in fields other than teaching for those who have majored in mathematics: Actuarial statistician, actuary, computer, mathematical aide, mathematical assistant, mathematician, statistical clerk, and statistician. Opportunities for such positions are to be found in government service, insurance companies, and industry. For some types of mathematical work graduate study is necessary.

Medical Technology — To be eligible to take the examination for certification as a Medical Technologist by the Registry of Medical Technologists of the American Society of Clinical Pathologists a candidate must have completed a two-year college program including specified work in biology and chemistry prior to taking technical training in medical technology for at least twelve consecutive months in a school of medical technology approved by the Council on Medical Education and Hospitals of the American Medical Association.

The two-year program on page 79 has been approved by the Registry of Medical Technologists as meeting their requirements for basic college preparation. Qualified candidates then enter a school of medical technology in an approved hospital and receive their technical training in biochemistry, hematology, bacteriology, parasitology, histology, serology, and other subjects. Upon the successful completion of this work the candidate is eligible to take the examination for certification as a Medical Technologist (M.T.) by the Registry of Medical Technologists, recognized as the authoritative qualifying body for this field.

Medicine—In order to be eligible for admission to a medical school according to the Committee on Education of the American Medical Association, a candidate must have attended an approved college and have included certain specific work in his program. The minimum course requirements include year courses in each of the following fields: English, inorganic chemistry, organic chemistry, physics, and a foreign language. Since some medical schools impose additional requirements, premedical students should obtain full information from the medical school of their choice about the courses which must be offered for admission.

The premedical curriculum listed on page 78 will enable students to meet all the above standard requirements. The electives make it possible to obtain any particular additional courses required by some medical schools.

Students are cautioned that the successful completion of the required premedical program by no means ensures admission to a medical school. Since most medical schools have far more applicants than they can admit, standards of selection are most rigorous and take into consideration not only the quality of the applicant's academic record and instructor's recommendations but also his or her medical-aptitude test score and the results of a personal interview.

Ministry—Preparation for the ministry today requires a theological school training following graduation from an approved college of liberal arts. The American Association of Theological Schools states that the appropriate foundation for a minister's later professional studies lies in a broad and comprehensive college education and that the normal place for a minister's professional study is the theological school. Recommended fields of study include English, economics, education, government, history, foreign languages, one of the natural sciences, philosophy, psychology, and sociology.

While students who major in English, economics, psychology, or sociology will be able to arrange programs meeting the above recommen-

datations, it is urged that preministerial students obtain counsel from the dean of the theological school of their choice since some schools have further specific requirements.

Physics—As a result of the rapid developments in physics in recent years, there are increasing opportunities in applied physics on the technical staffs and in the research laboratories of the electrical, electronics, radio, optical, and other industries for the liberal arts graduate who has majored in physics. Graduate study is necessary for those who plan on research in pure physics.

Psychology—There is an increasing demand for persons trained in psychology in a wide range of occupational fields. In the field of education the demand is expanding for school psychologists at the grade school level and for guidance workers and vocational counselors at the junior and senior high school level.

In the field of business and industry increasing numbers of psychologists are being employed in marketing research, in advertising, and in personnel departments. In state and federal governmental agencies clinical psychologists are employed in hospitals for the mentally ill, in child guidance clinics, in employment offices, and as research workers on problems relating to cultural relations with other countries, to propaganda, and to education.

A large number of these positions require that the applicant have at least one year of graduate work and not a few require that he or she have a Ph.D. degree.

Social Service—Students who major in sociology lay the undergraduate foundation for numerous phases of work with either private or public agencies in the social service field, such as social case work, family welfare, child welfare, probation and parole, juvenile court, and settlement work, and relief administration. At least one year of graduate study in a school of social work is essential for those who desire full professional status.

Statistical Work—The growing emphasis upon statistics in business, education, social service, and government has opened a new career field for the student who majors in mathematics and obtains preparation in statistics. Similar training is necessary for students who wish to enter the actuarial field.

Teaching (Secondary School)—While a major in education is not offered in the College of Liberal Arts, a minor in this field is available which meets the recommended preparation of the Department of Education of the Commonwealth of Massachusetts for teachers in secondary schools. Students from other states should familiarize themselves with the requirements of their own state as these requirements are constantly being increased.

Most small secondary schools, in which the graduate must begin, expect teachers to be able to teach at least two, and often three, subjects. Consequently programs should provide for the common combinations

of related subjects. A major should be selected from the following fields: biology, chemistry, English, history-government, modern languages, or mathematics-physics.

Students who desire to become teacher-coaches may minor in physical education, provided they elect the required courses in education.

Teaching (College)—Students who plan to enter the college teaching profession will find that each of the major programs affords an excellent preparation for graduate study in the leading universities of the country. Since graduate schools usually require a reading knowledge of French or German, frequently both, students should elect adequate work in these languages. Seminar courses and thesis work are strongly recommended for their training in research techniques.

Admission Requirements

Applicants for admission to the freshman class must qualify by graduation from an approved course of study in an accredited secondary school, including prescribed subjects listed below.

Applicants are not required to take entrance examinations in high school subjects, but all candidates for the freshman class are asked to come to Northeastern University to take scholastic aptitude tests.

In the event that the distance to Boston from an applicant's place of residence is great, the Committee on Admissions is willing under certain conditions to make a decision on test results submitted by the College Entrance Examination Board.

Prescribed Subjects for Admission

College of Liberal Arts

Fifteen units are required for admission and must include three units (four years) in English and at least six units in foreign languages, mathematics, science, and/or social studies except that students planning to major in a science must present two units in algebra and one unit in plane geometry, and those who are planning to major in chemistry, mathematics, or physics must also present one unit in physics. The remaining units are elective from other secondary school subjects which are acceptable to the Committee on Admissions.

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

Other Requirements

These formal requirements are necessary and desirable in that they tend to provide all entering students with a common ground upon which the first year of the college curriculum can be based. But academic credits alone are not an adequate indication of a student's ability to profit by a college education. Consequently, the Department of Admissions takes into consideration a student's interests and aptitudes in so far as they

can be determined, capacity for hard work, attitude toward classmates and teachers in high school, physical stamina, and most important of all, character. In this way the University seeks to select for its student body those who not only meet the academic admission requirements but who also give promise of acquitting themselves creditably in the rigorous program of training afforded by the Co-operative Plan and of being useful members of society.

Personal Interview

A personal interview is always preferred to correspondence, and parents are urged to accompany the applicant whenever this is possible. Effective guidance depends in large measure upon a complete knowledge of a student's background and problems. Parents invariably are able to contribute information that aids the admissions officer in arriving at a decision.

Applicants who come from a distance are advised to write in advance to see if it is possible to arrange for an interview and for the required scholastic aptitude tests on the same day. The examinations are scheduled only on Saturday mornings, at dates to be announced.

Office hours are from 9:00 A.M. to 4:00 P.M. daily; Saturdays to 12:00 M. The Department of Admissions will interview applicants on Wednesday evenings but by appointment only.

Application for Admission

Each applicant for admission is required to fill out an application blank stating previous education, as well as the names of persons to whom reference may be made.

A fee of five dollars (\$5.00) is required when the application is filed. This fee is nonreturnable.

The last page of this catalog is in the form of an application blank. It should be filled out in ink and forwarded with the required five-dollar fee to Director of Admissions, Northeastern University, Boston 15, Massachusetts. Checks should be made out to Northeastern University.

Upon receipt of the application, properly filled out, the University secures the references and secondary school record. Applicants having satisfactory secondary school records are notified to report at the University to take special scholastic aptitude tests. As soon as possible after the Committee on Admissions has reviewed the results of these tests a report of status with respect to admission will be sent to each candidate.

Early filing of applications is recommended.

The University reserves the right to place any entering student upon an indefinite trial period.

Tuition Deposit

Applicants accepted for admission must upon request pay a non-returnable tuition deposit of twenty-five dollars (\$25) as evidence of their bona fide intentions to matriculate.

Registration

Eligibility for admission does not constitute registration. Freshmen

will register at the University on Wednesday, September 6, 1950, and Wednesday, November 15, 1950. Students are not considered to have met the requirements for admission until they have successfully passed the required physical examination.

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it, and they are approved by the Co-operative Work Department in an interview scheduled in the late spring or summer previous to registration in September. Whenever a person enters with advanced standing and later proves to have had inadequate preparation in any prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their initial inquiry.

Outline of Freshman Courses

The first year is a period of full-time study during which the student must demonstrate fitness for the program which has been elected. Students who are unsuccessful in the basic courses of the freshman year will not be permitted to continue with their advanced program, but will be advised to change their goal and type of training. In some instances this will mean change to another curriculum at Northeastern; in others, withdrawal from the institution. *The freshman courses are so arranged as to permit change of objective during or at the end of the first year with a minimum loss of time.*

Requirements for Graduation

Degrees

The College of Liberal Arts awards the Bachelor of Arts degree to qualified candidates who have majored in economics, English, history and government, psychology, or sociology.

The Bachelor of Science degree is awarded to qualified candidates who have majored in biology, chemistry, mathematics, physics, or have taken the premedical curriculum.

Quantity Requirements

Candidates for a degree must have completed one of the curricula listed on pages 69-81. Each curriculum provides for not less than 208 credit hours of work, including at least 48 credit hours of advanced work in a major field, and at least 24 credit hours of prescribed or elective courses in a related minor field.

All candidates for a degree must have satisfactorily completed in college one year of a modern foreign language above the elementary level.

Students who undertake co-operative work assignments must meet

the requirements of the Department of Co-operative Work before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least one year of academic work immediately preceding graduation has been completed at Northeastern.

Quality Requirement

Of the 208 or more credit hours required for a degree, at least 135 credit hours must have been completed with a grade of C or better.

Graduation with Honor

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least three years before they may become eligible for honors at graduation.

Graduate Study

Graduate work in biology and chemistry is offered to properly qualified students desiring to undertake advanced study leading to the degree of Master of Science. Candidates for admission to this program must be high ranking students who have completed, or will have completed prior to admission to the graduate program, the requirements for the Bachelor of Science degree with major in biology or chemistry at an institution of recognized standing. At the present time the program is limited to teaching fellows at Northeastern University who are required to devote half time to instruction at the undergraduate level. The requirements for the Master's degree should be completed in two years.

Requirements for the Master of Science Degree

Candidates for the degree of Master of Science in biology or chemistry must have completed satisfactorily 48 credit hours of study beyond that required for the Bachelor's degree. Of these, at least 32 credit hours must be graduate courses in the major field, these credits including formal course work and a thesis. Sixteen credits may be earned in a graduate seminar, advanced undergraduate courses approved by the head of the department concerned, or a combination of both. Graduate students must obtain a grade of B or better in any undergraduate course taken for credit.

The thesis subject must be approved by the head of the department within four weeks of the date of registration for graduate study. Theses must be completed in the major field of study at least four weeks in advance of the date on which the degree is to be awarded. After the thesis has been completed, a written or oral comprehensive examination may be required at the discretion of the department concerned.

Individual programs of study must have the approval of the Director of Graduate Study who also acts as registration officer for graduate students.

Curricular Requirements

The following fields of study are approved as major fields in the College of Liberal Arts: biology, chemistry, economics, English, English-Journalism, history and government, mathematics, physics, premedical, psychology, and sociology. In addition, two-year programs are approved for pre dental, pre legal, and premedical technology students.

Students may elect their minor fields after consultation with their faculty advisers. In addition to the major fields listed above, the following subjects are available as minors: education, French, German, philosophy, physical education, and Spanish.

The required courses in each curriculum are indicated on the following pages. Upon petition to the faculty, substitutions may be permitted in exceptional cases when required by the specific vocational objective of the student.

During the last year students in all curricula are required to attend a series of meetings designed to prepare them for placement in specific positions in their chosen vocational field. Under expert guidance each student prepares a complete personnel record, studies himself or herself and the opportunities that are open, and works out a complete campaign for obtaining after-graduation employment.

Combined Program Liberal Arts and Law

The combined curriculum in the College of Liberal Arts and the School of Law enables students to reduce by one year the time ordinarily required for obtaining the A.B. or S.B. and the LL.B. degree. Students who have completed before entering the School of Law a total of 168 credit hours of academic work, of which at least 112 must have been earned in the Northeastern University College of Liberal Arts, and who have fulfilled all other graduation requirements, will receive the A.B. or S.B. degree upon the satisfactory completion of the full first year program in the Day Division of the School of Law. Students who enter the Evening Division of the School of Law will be eligible for the first degree upon satisfactory completion of the full equivalent of the first year of the day Law School program.

In both instances the first degree will be conferred at the next Commencement following determination of eligibility for the first degree.

Curriculum in Biology

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.			
30-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
11-01	Gen. Chem.	3	3	6	4	11-02	Gen. Chem.	3	3	6	4	11-03	Gen. Chem.	3	3	6	4
14-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
10-01	Gen. Zool.	2	3	4	3	10-02	Gen. Zool.	2	3	4	3	10-03	Gen. Bot.	2	3	4	3
	Mod. Lang.						Mod. Lang.					Mod. Lang.					
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		14	8	28	16			14	8	28	16			14	8	28	16

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
10-04	Gen. Bot.	3	3	6	2	10-55	Comp. Anat.	2	6	4	4	10-56	Comp. Anat.	2	6	4	4
11-04	Gen. Chem.	3	3	6	2	25-01	Int. Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8	4
15-11	Gen. Phys.	6	0	12	3	15-12	Gen. Phys.	3	3	9	5	15-13	Gen. Phys.	3	3	9	5
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
		15	6	30	8½			13	9	29	17			13	9	29	17

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
Elective	8	0	16	4	10-61 Embryology	2	6	4	4	10-62 Embryology	2	6	4	4
Elective	8	0	16	4	10-40 Physiology	4	0	8	4	10-41 Physiology	4	0	8	4
					11-17 Quant. Anal.	3	3	6	4	11-18 Quant. Anal.	2	3	4	3
					or Elective	4	0	8	4	or Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		13	9	26	16		12	9	24	15
					or	14	6	28	16	or	12	6	28	16

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
Elective	8	0	16	4	10-59 An. Histol.	2	6	4	4	10-60 An. Histol.	2	6	4	4
Elective	8	0	16	4	10-65 Genetics	4	0	8	4	10-71 Hist. Biol.	4	0	8	4
					11-26 Org. Chem.	5	6	10	7	11-27 Org. Chem.	5	6	10	7
					or Elective	4	0	8	4	or Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		15	12	30	19		15	12	30	19
					or	14	6	28	16	or	14	6	28	16

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
Elective	8	0	16	4	10-77 An. Ecol.	2	6	4	4	10-77 An. Ecol.	2	6	4	4
Elective	8	0	16	4	10-20 Gen. Bact.	2	6	4	4	10-21 Gen. Bact.	2	6	4	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		12	12	24	16		12	12	24	16

*Summer term — 5 weeks.

Curriculum in Economics

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
0-01	English I	3	0	6	3	30-02	English I	3	0	6	3	30-03	English I	3	0	6	3
3-01	West. Civ.	4	0	8	4	23-02	West. Civ.	4	0	8	4	23-03	West. Civ.	4	0	8	4
2-01	Am. Gov. or	3	0	6	3	22-02	Am. Gov. or	3	0	6	3	22-03	Am. Gov. or	3	0	6	3
4-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
5-07	Surv. Sci. or	3	0	6	3	15-08	Surv. Sci. or	3	0	6	3	15-09	Surv. Sci. or	3	0	6	3
0-11	Gen. Biol.	2	3	4	3	10-12	Gen. Biol.	2	3	4	3	10-13	Gen. Biol.	2	3	4	3
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
5-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		15	2	30	16			15	2	30	16			15	2	30	16
	or	16	5	32			or	16	5	32			or	16	5	32	

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
5-10	Surv. Sci. or	4	0	8	2	20-05	Econ. Geog.	4	0	8	4	20-13	Econ. Prin.	4	0	8	4
0-14	Gen. Biol.	3	3	6	2	25-01	Int. Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8	4
3-04	West. Civ.	4	0	8	2	26-01	Prin. Soc.	4	0	8	4	26-01	Prin. Soc.	4	0	8	4
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
0-04	English	5	0	10	2½												
		16	0	32	8			16	0	32	16			16	0	32	16
	or	15	3	30													

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
Elective	8	0	16	4	20-14 Econ. Prob.	4	0	8	4	20-15 Econ. Prob.	4	0	8	4
Elective	8	0	16	4	20-16 Acct. Prin.	3	2	7	4	20-17 Acct. Prin.	3	2	7	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	<u>16</u>	<u>0</u>	<u>32</u>	<u>8</u>		<u>15</u>	<u>2</u>	<u>31</u>	<u>16</u>		<u>15</u>	<u>2</u>	<u>31</u>	<u>16</u>

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
Elective	8	0	16	4	20-20 Statistics	3	2	7	4	20-21 Statistics	3	2	7	4
Elective	8	0	16	4	20-18 Am. Ec. Hist.	4	0	8	4	20-26 Labor Econ.	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
Elective	8	0	16	4	20-24 Mon. & Bk.	4	0	8	4	20-25 Bus. Cycles	4	0	8	4
Elective	8	0	16	4	20-31 Ad.Ec.Theo.	4	0	8	4	20-32 Ad. Ec. Theo.	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4

Summer term — 5 weeks.

Curriculum in English and English-Journalism

FIRST YEAR

TERM 1				TERM 2				TERM 3			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
30-01	English I	3	0	6	3	30-02	English I	3	0	6	3
23-01	West. Civ.	4	0	8	4	23-02	West. Civ.	4	0	8	4
22-01	Am. Gov. or	3	0	6	3	22-02	Am. Gov. or	3	0	6	3
14-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3
15-07	Surv. Sci. or	3	0	6	3	15-08	Surv. Sci. or	3	0	6	3
10-11	Gen. Biol.	2	3	4	3	10-12	Gen. Biol.	2	3	4	3
	Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0
		15	2	30	16			15	2	30	16
	or	16	5	32			or	16	5	32	

SECOND YEAR

TERM 4*				TERM 5				TERM 6			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
15-10	Surv. Sci. or	4	0	8	2	20-05	Econ. Geog.	4	0	8	4
10-14	Gen. Biol.	3	3	6	2	23-17	U.S. to 1865	4	0	8	4
23-04	West. Civ.	4	0	8	2	30-33	Engl. Lit.	4	0	8	4
	Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4
30-04	English	5	0	10	2½						
		16	0	32	8			16	0	32	16
	or	15	3	30							

THIRD YEAR

TERM 7*				TERM 8				TERM 9			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
	Elective	8	0	16	4	30-21	Inter. Writ.	4	0	8	4
	Elective	8	0	16	4	26-01	Prin. Soc.	4	0	8	4
							Elective	4	0	8	4
							Elective	4	0	8	4
		16	0	32	8			16	0	32	16

FOURTH YEAR

TERM 10*				TERM 11				TERM 12			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
	Elective	8	0	16	4	30-29	Found. Engl.				
	Elective	8	0	16	4		Lang. or	4	0	8	4
						30-51	Int. Jour.	4	0	8	4
						30-35	Am. Lit.	4	0	8	4
							Elective	4	0	8	4
							Elective	4	0	8	4
		16	0	32	8			16	0	32	16

FIFTH YEAR

TERM 13*				TERM 14				TERM 15			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
	Elective	8	0	16	4	30-43	19th Ct. Pr.	4	0	8	4
	Elective	8	0	16	4	30-53	or Tech. of				
							Jour.	4	0	8	4
						30-61	Shakespeare	4	0	8	4
							Elective	4	0	8	4
							Elective	4	0	8	4
		16	0	32	8			16	0	32	16

*Summer term — 5 weeks.

Curriculum in History-Government

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
0-01	English I	3	0	6	3	30-02	English I	3	0	6	3	30-03	English I	3	0	6	3
3-01	West. Civ.	4	0	8	4	23-02	West. Civ.	4	0	8	4	23-03	West. Civ.	4	0	8	4
2-01	Am. Gov. or	3	0	6	3	22-02	Am. Gov. or	3	0	6	3	22-03	Am. Gov. or	3	0	6	3
4-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
5-07	Surv. Sci. or	3	0	6	3	15-08	Surv. Sci. or	3	0	6	3	15-09	Surv. Sci. or	3	0	6	3
0-11	Gen. Biol.	2	3	4	3	10-12	Gen. Biol.	2	3	4	3	10-13	Gen. Biol.	2	3	4	3
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
5-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		15	2	30	16			15	2	30	16			15	2	30	16
	or	16	5	32			or	16	5	32			or	16	5	32	

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
5-10	Surv. Sci. or	4	0	8	2	20-05	Econ. Geog.	4	0	8	4	20-13	Econ. Prin.	4	0	8	4
0-14	Gen. Biol.	3	3	6	2	23-17	U.S. Hist.	4	0	8	4	23-18	U.S. Hist.	4	0	8	4
3-04	West. Civ.	4	0	8	2	30-33	Engl. Lit.	4	0	8	4	30-34	Engl. Lit.	4	0	8	4
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
0-04	English	5	0	10	2½												
		16	0	32	8			16	0	32	16			16	0	32	16
	or	15	3	30													

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
Elective	8	0	16	4	22-11 For. Gov.	4	0	8	4	22-12 For. Gov.	4	0	8	4
Elective	8	0	16	4	23-11 Eur. Hist.	4	0	8	4	23-12 Eur. Hist.	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
Elective	8	0	16	4	22-13 Pol. Theory	4	0	8	4	22-14 Pol. Theory	4	0	8	4
Elective	8	0	16	4	23-13 Engl. Hist.	4	0	8	4	23-14 Engl. Hist.	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		16	0	32	16		16	0	32	16

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
Elective	8	0	16	4	22-20 Pub. Adm.	4	0	8	4	22-21 Pub. Adm.	4	0	8	4
Elective	8	0	16	4	23-19 Lt. Am. His.	4	0	8	4	23-10 Lt. Am. His.	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		16	0	32	16		16	0	32	16

Summer term — 5 weeks.

Curriculum in Physics

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.			
0-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
1-01	Gen. Chem.	3	3	6	4	11-02	Gen. Chem.	3	3	6	4	11-03	Gen. Chem.	3	3	6	4
4-01	Coll. Alg.	5	0	7	4	14-02	Trig.	5	0	7	4	14-03	Anal. Geom.	5	0	10	5
5-01	Physics	3	0	6	3	15-02	Physics	3	0	6	3	15-03	Physics	3	0	6	3
	Mod. Lang.						Mod. Lang.					Mod. Lang.					
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
6-10	Phys. Train.	0	2	0	0	16-11	Phys. Train.	0	2	0	0	16-12	Phys. Train.	0	2	0	0
		17	5	31	17			17	5	31	17			17	5	34	18

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
1-04	Gen. Chem.	3	3	6	2	30-33	Eng. Lit.	4	0	8	4	30-34	Eng. Lit.	4	0	8	4
4-04	Int. to Calc.	5	0	10	2½	14-05	Diff. Calc.	4	0	8	4	14-06	Int. Calc.	4	0	8	4
5-04	Physics	3	0	6	1½	15-05	Physics	3	3	6	4	15-06	Physics	3	3	6	4
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
		14	3	28	7½			15	3	30	16			15	3	30	16

THIRD YEAR

TERM 7*					TERM 8					TERM 9						
Elective	8	0	16	4	15-15	Elect.&Mag.	3	0	6	3	15-24	Electronics	3	2	7	4
Elective	8	0	16	4	15-20	Optics	3	3	6	4	15-21	Optics	3	3	6	4
					14-07	Diff. Eq.	4	0	5	3	14-18	Theo. Eq.	4	0	8	4
						Elective	4	0	8	4		Elective	4	0	8	4
	16	0	32	8			14	3	25	14			14	5	29	16

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
Elective	8	0	16	4	15-22 Acoustics	3	3	6	4	15-23 Acoustics	3	3	6	4
Elective	8	0	16	4	15-25 Electronics	3	2	7	4	15-28 El. Instr. or	2	4	6	4
					14-15 Adv. Calc.	4	0	8	4	15-29 Radio Comm.	3	2	7	4
					Elective	4	0	8	4	14-16 Adv. Calc.	4	0	8	4
										Elective	4	0	8	4
										</				

FIFTH YEAR

TERM 13*					TERM 14					TERM 15						
Elective	8	0	16	4	15-26	Mod. Phys.	4	0	8	4	15-27	Mod. Phys.	4	0	8	4
Elective	8	0	16	4	14-17	Inf. Series	4	0	8	4	14-20	Spec. Topics				
						Elective	4	0	8	4		in Math.	4	0	8	4
						Elective	4	0	8	4		Elective	4	0	8	4
												Elective	4	0	8	4
												Elective	4	0	8	4

Summer term — 5 weeks.

Two-Year Predental Curriculum

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
30-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
11-01	Gen. Chem.	3	3	6	4	11-02	Gen. Chem.	3	3	6	4	11-03	Gen. Chem.	3	3	6	4
14-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
10-01	Gen. Zool.	2	3	4	3	10-02	Gen. Zool.	2	3	4	3	10-03	Gen. Bot.	2	3	4	3
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		14	8	28	16			14	8	28	16			14	8	28	16

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
10-04	Gen. Bot.	3	3	6	2	10-55	Comp. Anat.	2	6	4	4	10-56	Comp. Anat.	2	6	4	4
11-04	Gen. Chem.	3	3	6	2	25-01	Int. Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8	4
15-11	Gen. Phys.	6	0	12	3	15-12	Gen. Phys.	3	3	9	5	15-13	Gen. Phys.	3	3	9	5
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
		15	6	30	8½			13	9	29	17			13	9	29	17

TERM 5-A					
10-40	Physiology	4	0	8	4
11-26	Org. Chem.	5	6	10	7
30-33	Eng. Lit.	4	0	8	4
		13	6	26	15

NOTE: Predental students who wish to continue for a degree may be excused from the Co-operative Plan and may complete requirements for a degree in four years.

*Summer term — 5 weeks.

Two-Year Prelegal Curriculum

FIRST YEAR

TERM 1						TERM 2						TERM 3					
Jo.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
0-01	English I	3	0	6	3	30-02	English I	3	0	6	3	30-03	English I	3	0	6	3
3-01	West. Civ.	4	0	8	4	23-02	West. Civ.	4	0	8	4	23-03	West. Civ.	4	0	8	4
2-01	Am. Gov. or	3	0	6	3	22-02	Am. Gov. or	3	0	6	3	22-03	Am. Gov. or	3	0	6	3
4-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
5-07	Surv. Sci. or	3	0	6	3	15-08	Surv. Sci. or	3	0	6	3	15-09	Surv. Sci. or	3	0	6	3
0-11	Gen. Biol.	2	3	4	3	10-12	Gen. Biol.	2	3	4	3	10-13	Gen. Biol.	2	3	4	3
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
6-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		15	2	30	16			15	2	30	16			15	2	30	16
	or	16	5	32			or	16	5	32			or	16	5	32	

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
5-10	Surv. Sci. or	4	0	8	2	20-05	Econ. Geog.	4	0	8	4	20-13	Econ. Prin.	4	0	8	4
0-14	Gen. Biol.	3	3	6	2	23-17	U.S. Hist.	4	0	8	4	23-18	U.S. Hist.	4	0	8	4
3-04	West. Civ.	4	0	8	2	30-33	Engl. Lit.	4	0	8	4	30-34	Engl. Lit.	4	0	8	4
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
0-04	English	5	0	10	2½												
		16	0	32	8			16	0	32	16			16	0	32	16
	or 15	3	30														

TERM 5-A

22-11	Comp. Gov.	4	0	8	4
23-13	Engl. Hist.	4	0	8	4
	Elective	4	0	8	4
	Elective	4	0	8	4
		16	0	32	16

NOTE: Prelegal students who wish to qualify for the A.B. degree under the Combined Program with the Northeastern University Law School, described on page 68, attend college for a third year of four terms without going on the Co-operative Plan.

*Summer term — 5 weeks.

Premedical Curriculum

FIRST YEAR

TERM 1				TERM 2				TERM 3			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
30-01	English	3	0	6	3	30-02	English	3	0	6	3
11-01	Gen. Chem.	3	3	6	4	11-02	Gen. Chem.	3	3	6	4
14-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3
10-01	Gen. Zool.	2	3	4	3	10-02	Gen. Zool.	2	3	4	3
	Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0
		14	8	28	16			14	8	28	16

SECOND YEAR

TERM 4*				TERM 5				TERM 6			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
10-04	Gen. Bot.	3	3	6	2	10-55	Comp. Anat.	2	6	4	4
11-04	Gen. Chem.	3	3	6	2	11-17	Quant. Anal.	3	3	6	4
15-11	Gen. Phys.	6	0	12	3	15-12	Gen. Phys.	3	3	9	5
	Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4
		15	6	30	8½			12	12	27	17

THIRD YEAR

TERM 7*				TERM 8				TERM 9			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
	Elective	8	0	16	4	10-61	Embryology	2	6	4	4
	Elective	8	0	16	4	11-26	Org. Chem.	5	6	10	7
		16	0	32	8		Elective	4	0	8	4
								11	12	22	15

FOURTH YEAR

TERM 10*				TERM 11				TERM 12			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
	Elective	8	0	16	4	10-40	Physiology	4	0	8	4
	Elective	8	0	16	4		Elective	4	0	8	4
		16	0	32	8		Elective	4	0	8	4
							Elective	4	8	0	4
								16	0	32	16

FIFTH YEAR

TERM 13*				TERM 14				TERM 15			
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
	Elective	8	0	16	4	10-65	Genetics	4	0	8	4
	Elective	8	0	16	4		Elective	4	0	8	4
		16	0	32	8		Elective	4	0	8	4
							Elective	4	0	8	4
								16	0	32	16

NOTE: Premedical students may be excused from the Co-operative Plan and may complete this program in four years.

*Summer term — 5 weeks.

Two-Year Premedical Technology Curriculum

FIRST YEAR

TERM 1					TERM 2					TERM 3				
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.
0-01	English	3	0	6 3	30-02	English	3	0	6 3	30-03	English	3	0	6 3
1-01	Gen. Chem.	3	3	6 4	11-02	Gen. Chem.	3	3	6 4	11-03	Gen. Chem.	3	3	6 4
4-21	Basic Math.	3	0	6 3	14-22	Basic Math.	3	0	6 3	14-23	Basic Math.	3	0	6 3
0-01	Gen. Zool.	2	3	4 3	10-02	Gen. Zool.	2	3	4 3	10-03	Gen. Bot.	2	3	4 3
	Mod. Lang.					Mod. Lang.					Mod. Lang.			
	Elective	3	0	6 3		Elective	3	0	6 3		Elective	3	0	6 3
6-10	Phys. Train.	0	2	0 0	16-11	Phys. Tr.	0	2	0 0	16-12	Phys. Tr.	0	2	0 0
		14	8	28 16			14	8	28 16			14	8	28 16

SECOND YEAR

TERM 4*					TERM 5					TERM 6				
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.
0-04	Gen. Bot.	3	3	6 2	10-55	Vert. Zool.	2	6	4 4	10-55	Vert. Zool.	2	6	4 4
1-04	Gen. Chem.	3	3	6 2	11-17	Quant. Anal.	3	3	6 4	11-18	Quant. Anal.	2	3	4 3
5-11	Gen. Phys.	6	0	12 3	15-12	Gen. Phys.	3	3	9 5	15-13	Gen. Phys.	3	3	9 5
	Mod. Lang.					Mod. Lang.					Mod. Lang.			
	Elective	3	0	6 1½		Elective	4	0	8 4		Elective	4	0	8 4
		15	6	30 8½			12	12	27 17			11	12	25 16

TERM 5-A				
No.	Course	Cl.	Lab.	Pr. Cr.
10-40	Anim. Phys.	4	0	8 4
11-26	Org. Chem.	5	6	10 7
	Lib. Elect.	4	0	8 4
		13	6	26 15

NOTE: Premedical Technology students who wish to continue for a degree may be excused from the Co-operative Plan and may complete requirements for a degree in four years.

*Summer term — 5 weeks.

Curriculum in Psychology

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.			
30-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
11-01	Gen. Chem.	3	3	6	4	11-02	Gen. Chem.	3	3	6	4	11-03	Gen. Chem.	3	3	6	4
14-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
10-01	Gen. Zool.	2	3	4	3	10-02	Gen. Zool.	2	3	4	3	10-03	Gen. Bot.	2	3	4	3
	Mod. Lang.						Mod. Lang.					Mod. Lang.					
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		14	8	28	16			14	8	28	16			14	8	28	16

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
10-04	Gen. Bot.	3	3	6	2	10-55	Comp. Anat.	2	6	4	4	10-56	Comp. Anat.	2	6	4	4
11-04	Gen. Chem.	3	3	6	2	15-12	Gen. Phys.	3	3	9	5	15-13	Gen. Phys.	3	3	9	5
15-11	Gen. Phys.	6	0	12	3	25-01	Int. Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8	4
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
		15	6	30	8½			13	9	29	17			13	9	29	17

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
Elective	8	16	0	4	25-11 Ind. Diff.	4	0	8	4	25-17 Measure. I	4	0	8	4
Elective	8	16	0	4	25-12 Exp. Psych.	3	3	6	4	25-13 Exp. Psych.	3	3	6	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	32	0	8		15	3	30	16		15	3	30	16

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
Elective	8	16	0	4	25-18 Measure. II	4	0	8	4	25-14 Exp. Psych.	3	3	6	4
Elective	8	16	0	4	25-29 Psych. Pers.	4	0	8	4	25-31 Ab. Psych.	4	0	8	4
					25-71 Seminar	2	0	1	1	25-71 Seminar	2	0	1	1
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	32	0	8		18	0	33	17		17	3	31	17

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
Elective	8	16	0	4	25-32 Ab. Psych.	4	0	8	4	25-34 Child Psy.	4	0	8	4
Elective	8	16	0	4	25-36 Ind. Psych. or 4	4	0	8	4	25-37 Ind. Psy. or	4	0	8	4
					25-41 Adv. Psych.	4	0	8	4	25-42 Adv. Psy.	4	0	8	4
					25-73 Seminar	2	0	1	1	25-74 Seminar	2	0	1	1
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	<u>16</u>	<u>32</u>	<u>0</u>	<u>8</u>		<u>18</u>	<u>0</u>	<u>33</u>	<u>17</u>		<u>18</u>	<u>0</u>	<u>33</u>	<u>17</u>

*Summer term — 5 weeks.

Curriculum in Sociology

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
0-01	English I	3	0	6	3	30-02	English I	3	0	6	3	30-03	English I	3	0	6	3
3-01	West. Civ.	4	0	8	4	23-02	West. Civ.	4	0	8	4	23-03	West. Civ.	4	0	8	4
2-01	Am. Gov. or	3	0	6	3	22-02	Am. Gov. or	3	0	6	3	22-03	Am. Gov. or	3	0	6	3
4-21	Basic Math.	3	0	6	3	14-22	Basic Math.	3	0	6	3	14-23	Basic Math.	3	0	6	3
5-07	Surv. Sci. or	3	0	6	3	15-08	Surv. Sci. or	3	0	6	3	15-09	Surv. Sci. or	3	0	6	3
0-11	Gen. Biol.	2	3	4	3	10-12	Gen. Biol.	2	3	4	3	10-13	Gen. Biol.	2	3	4	3
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	3		Elective	3	0	6	3		Elective	3	0	6	3
6-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
		15	2	30	16			15	2	30	16			15	2	30	16
	or 16	5	32				or 16	5	32				or 16	5	32		

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
5-10	Surv. Sci. or	4	0	8	2	20-05	Econ. Geog.	4	0	8	4	20-13	Econ. Prin.	4	0	8	4
0-14	Gen. Biol.	3	3	6	2	25-01	Int. Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8	4
3-04	West. Civ.	4	0	8	2	26-01	Prin. Soc.	4	0	8	4	26-02	Prin. Soc.	4	0	8	4
	Mod. Lang.						Mod. Lang.						Mod. Lang.				
	Elective	3	0	6	1½		Elective	4	0	8	4		Elective	4	0	8	4
0-04	English	5	0	10	2½												
		16	0	32	8			16	0	32	16			16	0	32	16
	or 15	3	30														

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
Elective	8	0	16	4	20-14 Econ. Prob.	4	0	8	4	20-15 Econ. Prob.	4	0	8	4
Elective	8	0	16	4	26-11 Soc. Prob.	4	0	8	4	26-12 Soc. Prob.	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		16	0	32	16		16	0	32	16

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
Elective	8	0	16	4	26-13 Soc. Eth.	4	0	8	4	26-14 Soc. Eth.	4	0	8	4
Elective	8	0	16	4	26-15 The Family	4	0	8	4	26-16 Criminology	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		16	0	32	16		16	0	32	16

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
Elective	8	0	16	4	26-17 Urban Soc.	4	0	8	4	26-18 Soc. Prog.	4	0	8	4
Elective	8	0	16	4	26-19 Soc. Theory	4	0	8	4	26-22 Prin. Soc. Wk	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
					Elective	4	0	8	4	Elective	4	0	8	4
	16	0	32	8		16	0	32	16		16	0	32	16

Summer term — 5 weeks.

Synopses of Courses of Instruction

On the pages which follow are given the synopses of courses offered in the several curricula of the College of Liberal Arts. Curricula in each of the three colleges comprise 130 weeks of classroom instruction, namely, three ten-week periods in the freshman year and 100 weeks of upper-class work. On the Co-operative Plan, the upperclass courses are evenly distributed over four years so that each division of co-operative students has 25 weeks of college work, 26 weeks of co-operative work, and one week of vacation annually.

A complete list of the courses of instruction offered in each of the Day Colleges is included in a special section of the catalog beginning on page 196. This section lists the prerequisite and preparation requirements, class and laboratory hours per week, the number of hours normally required for study preparation hours, and the number of credits which have been assigned to each course.

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum. A considerable number of upperclass advanced courses are not offered every year. Information about specific course offerings in any year can be obtained from the office of the Dean of the College.

Biology

(Courses designated with (g) may be taken for graduate credit)

10-01 *General Zoology* — An elementary study of the invertebrate and vertebrate animals, emphasizing the principles underlying their morphology, physiology, economic importance, evolution, and distribution.

10-02 *General Zoology* — A continuation of 10-01.

10-03 *General Botany* — A study of the structure and physiological processes of plants, their taxonomy, economic importance, and distribution.

10-04 *General Botany* — A continuation of 10-03.

10-05 *Plant Ecology (g)* — The relationship of plants to their environment and an analysis of the factors influencing populations and distribution.

10-06 *Plant Ecology (g)* — A continuation of 10-05.

10-07 *Mycology (g)* — A comprehensive study of the Fungi, dealing with methods of culture, their growth, reproduction, morphology, taxonomy, and economic importance.

10-08 *Mycology (g)* — A continuation of 10-07.

10-11 *General Biology* — This course is designed for nonbiology majors and stresses the basic relationships of man to his living environment.

10-12 *General Biology* — A continuation of 10-10.

10-13 *General Biology* — A continuation of 10-11.

10-14 *General Biology* — A continuation of 10-12.

10-20 *General Bacteriology* (g)—The biology of microorganisms emphasizing the bacteria. Preparation of media, methods of sterilization, staining, isolation and identification of pure cultures.

10-21 *General Bacteriology* (g)—A continuation of 10-20.

10-22 *Advanced Bacteriology* (g)—The bacteria of water, sewerage, air and foods, with a study of the relation of bacteria to health and disease.

10-23 *Advanced Bacteriology* (g)—A continuation of 10-22.

10-40 *Physiology* — A course in human anatomy and physiology including the general principles of physiology, structure, and functions of the body.

10-41 *Physiology*—A continuation of 10-40.

10-42 *Advanced Physiology* (g)—Advanced discussions of the physiological activities of the systems of the body.

10-43 *Advanced Physiology* (g) — A continuation of 10-42.

10-44 *Nutrition* — The principles of human nutrition, including digestion and metabolism of foodstuffs, food requirements of the body, and calculation of prescribed diets.

10-45 *Nutrition* — A continuation of 10-45. Weight control, composition of foods, child and infant nutrition, diet and reproduction.

10-46 *Diet Therapy* (g)—Dietetic treatment of the diseases of the digestive organs and kidneys; obesity and diabetes mellitus.

10-47 *Diet Therapy* (g) — A continuation of 10-47. The diet in deficiency diseases, allergies, and impaired functions of the skin and blood.

10-55 *Comparative Vetebrate Anatomy* — The development and significance of structural changes in the chordate groups as revealed by a comparative study of their anatomy.

10-56 *Comparative Vertebrate Anatomy* — A continuation of 10-55.

10-57 *Invertebrate Zoölogy* — The comparative development and structure of the invertebrate animals and their biological and ecological relationships.

10-58 *Invertebrate Zoölogy* — A continuation of 10-57.

10-59 *Animal Histology* — A consideration of the normal microscopic anatomy of the cell, histogenesis, and a detailed study of the organs of the body.

10-60 *Animal Histology* — A continuation of 10-59.

10-61 *Embryology* — The descriptive embryology of *Amphioxus*, and the development of organ systems in the chick, pig, and man.

10-62 *Embryology* — A continuation of 10-61.

10-63 *General Parasitology* — A general survey of the important parasites of man, their morphology, classification, life histories, and biological relationships.

10-64 *General Parasitology* — A continuation of 10-63.

10-65 *Genetics* — Modern methods of Mendelian analysis of variation among organisms related by descent. The theory of the gene and its application to plant and animal breeding.

10-67 *Mammalian Anatomy (g)*—An advanced laboratory course in the dissection of the mammal. In this part of the course the skeletal, muscular, digestive, and respiratory systems are considered.

10-68 *Mammalian Anatomy (g)*—A continuation of 10-67. Continued dissections of the urinogenital, circulatory, and nervous systems are made.

10-69 *Histological Technique* — The fundamentals of histological technique and practical exercises with various methods of fixation, clearing, hardening, embedding, section-cutting, and staining of tissues.

10-70 *Histological Technique* — A continuation of 10-69.

10-71 *History of Biology* — The development of biological sciences from the earliest times to the present, and the tracing of the development of the important biological concepts.

10-72 *History of Biology* — A continuation of 10-71.

10-73 *General Entomology* — A survey of the morphology of the main insect groups, their classification, distribution, economic, and general biological importance.

10-74 *General Entomology* — A continuation of 10-73.

10-75 *Seminar* — Assigned readings and reports on selected topics. May be taken with the consent of the department by qualified senior majors in biology.

10-76 *Seminar* — A continuation of 10-75.

10-77 *Animal Ecology* — Animals in relation to their environment with stress on factors influencing numbers and distribution.

10-78 *Animal Ecology* — A continuation of 10-77.

Graduate Courses in Biology

10-100 *Advanced Biology* — A study of biology from one or more of the following aspects: taxonomy, morphology, ecology, life history, and physiology. Field collections, dissections, cultures, or other laboratory preparations may be required.

10-101 *Advanced Biology* — A continuation of 10-100.

10-102 *Advanced Biology* — A continuation of 10-101.

10-103 *Advanced Biology* — A continuation of 10-102.

10-104 *Advanced Biology* — A continuation of 10-103.

10-105 *Advanced Biology* — A continuation of 10-104.

10-106 *Advanced Biology* — A continuation of 10-105.

10-120 *Thesis* — Graduate research.

10-121 *Thesis* — A continuation of 10-120.

10-122 *Thesis* — A continuation of 10-121.

10-123 *Thesis* — A continuation of 10-122.

10-124 *Thesis* — A continuation of 10-123.

10-125 *Thesis* — A continuation of 10-124.

10-126 *Thesis* — A continuation of 10-125.

10-127 *Thesis* — A continuation of 10-126.

10-128 *Seminar*.

Chemistry

11-01 *General Chemistry* — The fundamental ideas of matter and energy; the properties of gases; liquids and solids; atomic and molecular weight; equations; properties of solutions; classification of elements.

11-02 *General Chemistry* — Atomic structure and radioactivity; electrons and valence; ionic reactions; acids and bases.

11-03 *General Chemistry* — Chemistry of nonmetals; chemistry of metals; electrochemistry; industrial inorganic chemistry.

11-04 *General Chemistry* — Elements of organic chemistry; industrial organic chemistry.

11-09 *Advanced Inorganic Chemistry* — Valence; atomic structure; nature of crystal bonds; properties of elements.

11-11 *Qualitative Analysis* — Mass action law; ionic equilibria; solubility product; hydrolysis; principles of semi-micro technique; laboratory work is devoted to semi-micro method for analysis of anions and cations.

11-12 Quantitative Analysis—Theory and practice of volumetric analysis; weighing; titration; ignition; combustion.

11-13 Quantitative Analysis—Theory and practice of gravimetric analysis; mineral procedures; common technical methods.

11-15 Instrumental Analysis—Analysis by use of instruments; microscope; spectrograph; photometer; p H measurements; gas analysis.

11-17 Quantitative Analysis—Theory and practice of volumetric analysis; weighing; titration; ignition. A shorter course than 11-12.

11-18 Quantitative Analysis—Theory and practice of gravimetric analysis; colorimetry; pH measurements. A shorter course than 11-13.

11-20 Organic Chemistry—Reactions and properties of aliphatic compounds; class relationships; structural formulas; reaction mechanisms.

11-21 Organic Chemistry—Reactions and properties of aromatic compounds; importance and preparation of industrial aromatics.

11-22 Organic Chemistry—Reactions and properties of alicyclic and heterocyclic compounds; unit processes in organic chemistry; halogenation; oxidation; reduction; nitration; sulfonation; amination; and diazotization.

11-23 Organic Analysis Laboratory—Chemical and physical tests used in qualitative organic analysis; classification reactions; preparation of derivatives.

11-24 Organic Chemistry—Electronic interpretations of organic chemical reactions; discussions of current experimental literature from the viewpoint of the electronic theory; plastics; theory, preparation, and uses.

11-26 Organic Chemistry—Reaction and properties of aliphatic compounds; class relationships; structural formulas; introduction to study of aromatic compounds.

11-27 Organic Chemistry—Reactions and properties of aromatic compounds; nitration; sulfonation; elementary study of heterocyclic compounds.

11-28 Biological Chemistry—Properties of carbohydrates, proteins, fats, enzymes, vitamins, drugs; tests for carbohydrates, fats, proteins.

11-29 Biological Chemistry—Chemistry of food and nutrition, digestion; chemical analysis of blood, lymph, milk, tissue, wine, foods, drugs, vitamins.

11-30 Physical Chemistry—Structure of matter; the three states of matter, solutions, colloidal dispersions, molecular and atomic structure.

11-31 Physical Chemistry—Thermodynamics; the first law, thermochemistry, the second law and entropy, free energy, equilibrium, the phase rule, chemical kinetics.

11-32 Physical Chemistry—Solutions of electrolytes: electrical conductance, electrolytic equilibrium, electromotive force, electrolysis and polarization.

11-35 *Advanced Physical Chemistry*—Surface chemistry, photochemistry, reaction kinetics, third law of thermodynamics.

11-41 *Chemical Literature*—Types of chemical journals; library procedure; problems in obtaining information.

11-42 *History of Chemistry*—Development of scientific theories; contribution of scientific investigators.

11-43 *Thesis*—Experimental work under direction of staff members.

11-44 *Thesis*—Experimental work under direction of staff members.

Graduate Courses

11-100 *Advanced Physical Chemistry*—Study of advanced topics in physical chemistry.

11-101 *Advanced Physical Chemistry*—Continuation of 11-100.

11-102 *Advanced Physical Chemistry*—Continuation of 11-101.

11-103 *Advanced Organic Chemistry*—Study of advanced topics in organic chemistry.

11-104 *Advanced Organic Chemistry*—Continuation of 11-103.

11-105 *Advanced Organic Chemistry*—Continuation of 11-104.

11-106 *Advanced Organic Chemistry*—Continuation of 11-105.

11-107 *Thesis*—Experimental problem.

11-108 *Thesis*—Continuation of 11-107.

11-109 *Thesis*—Continuation of 11-108.

11-110 *Thesis*—Continuation of 11-109.

11-111 *Thesis*—Continuation of 11-110.

11-112 *Thesis*—Continuation of 11-111.

11-113 *Thesis*—Continuation of 11-112.

11-114 *Thesis*—Continuation of 11-113.

11-115 *Seminar*.

Economics

20-05 *Economic Geography*—In order to provide an adequate background for the study of economics, this course analyzes the economic resources of our country and the part played by these resources in the development of our modern industrial society. Emphasis is placed upon promot-

ing the comprehension of basic concepts rather than upon acquiring an encyclopedic knowledge of a mass of details.

20-11 Economics—After an analysis of the main characteristics of our modern economic order, attention is turned to the fundamental economic laws and principles governing the production of economic goods, the organization of business enterprise, money, banking, the business cycle, control of the price level, and international trade.

20-12 Economics—A continuation of 20-11. The first part of the course deals with the principles of price determination under competitive and monopolistic conditions, and the principles underlying the distribution of wealth and income into wages, interest, and profits. Consideration is then given to the major aspects of the economic problems of agriculture, public utility regulation, labor, consumption, public finance, and economic reform.

20-13 Economic Principles—A thorough grounding in the fundamental principles and laws of economics is the aim of this course. The main topics include the nature and organization of production, the nature and importance of wants, the relation of money and prices, the process of exchange, the nature of international trade, the determination of price under conditions of competition and monopoly, the distribution of wealth and income in the form of wages, economic rent, interest, and profits.

20-14 Economic Problems—In this course the application of economic principles to some of the major economic problems of modern society is emphasized. The problems studied include consumption, protective tariffs and subsidies, labor problems such as unemployment and labor unions, and the business cycle.

20-15 Economic Problems—A continuation of 20-14. Among the problems considered are the following: price stabilization, the agricultural problem, the relation of government to business, including control of monopolies and public utilities, insurance, public finance, and proposals for the remodeling and improving of the economic system.

20-16 Principles of Accounting—A survey of accounting principles with emphasis upon the nature, interpretation, and utilization of accounting data, and the preparation of financial statements.

20-17 Principles of Accounting—A continuation of 20-16 with attention to the problems of corporate accounting, the theories of cost and income and the interpretation of financial statements.

20-18 American Economic History—The economic development of the United States is traced from the colonial period to the present with special emphasis upon the period since the Civil War. Stress is laid upon

the importance of economic factors and changes in our history in the description of the development of manufacturing, agriculture, domestic and foreign commerce, finance and banking, transportation, and labor organizations. Consideration is given to European developments which have been closely related to those of the United States.

20-20 Statistics—This course is intended to give the student an understanding of statistical principles and methods and their practical application. A study is made of the nature, sources, collection, and organization of statistical facts; the presentation of such facts in tabular or graphic form, the various averages, measures of dispersion, and the construction and use of index numbers. Laboratory periods provide an opportunity for each student to demonstrate his ability to apply the principles studied.

20-21 Statistics—The major portion of this continuation of 20-20 concerns the analysis of time series, and includes the methods of obtaining trends, seasonal indexes, and the measurement of cyclical variation. The application of correlation analysis is given extended attention.

20-24 Money and Banking—This course considers the problems of monetary and banking control with particular emphasis upon the policies of the Federal Reserve System. Current developments are carefully considered.

20-25 Business Cycles—After a study of the conditions which underlie cyclical fluctuations in prices, volume of trade, physical production, and employment, a careful analysis is made of the more significant theories of the business cycle. The possibilities of controlling such fluctuations and of initiating recovery receive extended attention. Throughout the course emphasis is placed upon the current phase of the business cycle and its peculiar problems.

20-26 Labor Economics—After an intensive study of the application of economic principles to the labor markets and of the development of collective bargaining in the United States, the course will be devoted to an analysis of organization of unions, rights and responsibilities under the law, the bargaining process as reflected in the labor contract, and grievances and grievance procedures.

20-27 International Economic Relations—A careful examination of the important principles of international trade and finance precedes a critical survey of the international commercial policies of modern nations, with special reference to the United States. Such broader problems as the international control of raw materials, exchange restrictions, international cartels and the economic activities of the League of Nations and other international organizations are considered.

20-28 Economic Systems—After developing criteria for evaluating the different economic systems, the course proceeds to a comparative analysis

of capitalism, co-operation, socialism, communism, and fascism. The problems of economic planning receive particular attention.

20-31 Advanced Economic Theory—A critical review of the origin and development of economic thought. After a brief account of the contributions of Plato and Aristotle, the early Christian fathers, and the writers of the Middle Ages, each of the main schools of economic thought is taken up in turn: the Mercantilists, the Physiocrats, the Classical School, the Socialists, the Historical School, the Austrian School, and the Neo-Classical School.

20-32 Advanced Economic Theory—The course introduces the student to the more complex aspects of economic theory. Particular consideration is given to the major modern theoretical problems.

20-61 Seminar—Assigned readings and written reports on selected topics. May be elected with the consent of the department by qualified seniors majoring in economics.

20-62 Seminar—A continuation of 20-61.

The following courses offered in the College of Business Administration may be elected by majors in economics who have the necessary preparation:

- 43-21 Principles of Marketing
- 43-22 Principles of Advertising
- 44-21 Principles of Banking
- 44-22 Principles of Insurance
- 44-31 Business Finance
- 44-32 Business Finance
- 44-41 Investments
- 45-21 Industrial Management
- 45-22 Industrial Management
- 46-41 Business Law—Contracts

Education

NOTE: In addition to the courses listed, 25-15 and 25-16 Educational Psychology may be counted as courses in Education.

21-01 History of Education—Education is considered as the means by which nations have attempted to realize their social and spiritual ideals. This course traces the history of education from ancient times through the Greek and Roman periods, the Middle Ages, the Renaissance and Reformation, down to John Locke and the Enlightenment. The course is concerned with the development of points of view as well as with the details of organization and practice.

21-02 History of Education—Beginning with the emotional reaction against formalism in life as exemplified by Rousseau, this course takes up

the immediate background of modern education and traces the development of national systems. The influence of such men as Pestalozzi, Herbart, Froebel, Spencer, Mann, Barnard, Dewey, and others is studied in detail. The course closes with a consideration of present tendencies in education.

21-03 Educational Measurements—The course concerns itself with current problems in the field of educational tests and measurements. Most of the lectures are given over to a discussion of the construction and use of new type objective tests, with particular reference to the field of secondary education. The relative merits of the essay and the objective examination are considered in connection with the problem of grades and grading systems. Enough elementary statistics are included to enable students to use intelligently the results of testing. Emphasis is placed upon the importance of an accurate interpretation of test data and upon the futility of indiscriminate testing.

21-04 Educational Organization and Administration—A study of the principles underlying the organization, administration, and supervision of secondary schools in the U.S.A. The course is illustrated with suitable problems taken from actual practice. It should be of special interest to students who contemplate teaching as a vocation.

21-05 Comparative Education—A discussion of the educational background and current theories and practices of England, France, and Germany. Emphasis is laid upon the bearing of European education on American practice. Much of the assigned reading is in current periodical literature, although a basic text is also used. Lectures, special reports, and class discussions comprise the media by which the course is conducted.

21-06 Educational Sociology—The course considers the relationship between education and sociology. Educational objectives are set up from the findings of sociological research and the traditional curriculum is examined in the light of these objectives with a view towards its reconstruction. A critical attitude is maintained toward philosophical implications which will inevitably arise in the course.

21-07 Educational Philosophy—A study of the relationship between the science of education and the philosophy of education is followed by a consideration of philosophies of education in the light of basic theses of the history of philosophy. Such topics as evolutionism, behaviorism, pragmatism, instrumentalism, and progressive education are viewed in the perspective of the history of philosophy.

21-08 Principles of Secondary Education—A critical study of the aims, objectives and functions of secondary schools. Relations of the junior high school, the senior high school, and the junior college to American life are discussed.

21-09 Methods of Teaching in Secondary Schools—A fundamental course in methods of teaching. Such topics as motivation, socialization, drill, specific techniques, attention and fatigue, use of books and laboratories are discussed.

English

30-01 English I—A review of basic sentence structure and the grammatical functions of clauses and phrases, followed by a study of effective sentence writing, paragraph development, and reading techniques. Theme assignments are planned to develop practical skill in each of the phases studied.

30-02 English I—A study of the structure and organization of written compositions: outlining, development of compositions by phases, and the analysis of expository writings. Experimental work in each phase is carried out by means of theme assignments and readings.

30-03 English I—A study of the problems peculiar to each of the four main types of discourse: exposition, description, narrative, and argument. Theme work includes, in addition to these basic types, some assignments in the framing of reports and the writing of business letters.

30-04 Introduction to Literature—A study of the aims and techniques of various common types of literature: the play, the short story, lyrical and narrative poetry, and the literary essay. Instructional methods include assigned reading and the writing of short critical reports.

30-05 Public Speaking — The study and practice of the basic principles and techniques of effective modern speaking. The class is organized as a functional group. Emphasis is on conversational delivery and clear, concise composition. Group procedures, impromptu speaking, and the handling of short expository forms are practiced. The course trains for the communication requirements of everyday business, professional, and social life.

30-06 Public Speaking — A continuation of 30-05 with emphasis upon speech patterns which involve effective discussion, the study of fundamental issues, analysis, evidence, and reasoning as factors in convincing and persuading people.

30-09 Report Writing — The principles and techniques involved in planning and composing factual writing.

30-21 Intermediate Writing — A practice course in the writing of the shorter forms of composition. Each student will be given considerable latitude in writing in the field of his individual interest. Student manuscripts will be read and analyzed in class.

30-22 Intermediate Writing — A continuation of 30-21.

30-23 Advanced Composition — A course designed to meet the needs of advanced students who are interested in literary composition, who have already proved their ability in *Intermediate Writing* (30-21 and 30-22),

and who wish to continue their writing under supervision. Class instruction will be supplemented by individual conferences with the instructor. Special attention will be given to the preparation of manuscripts for publication.

30-24 *Advanced Composition*—A continuation of 30-23.

30-27 *Masters of the Drama*—A consideration of the outstanding dramatists and their works beginning with the Greek period.

30-28 *Masters of the Drama*—A continuation of 30-27 to the present.

30-29 *Foundations of the English Language*—A study of the complex origin of the English language, tracing historically the influences which have modified the Saxon base. The course includes a detailed examination of the grammatical characteristics of Greek, Latin, and Saxon, with a study of the roots and affixes which those languages have chiefly contributed to the formation of English words.

30-30 *Foundations of the English Language*—A continuation of 30-29. A study of the ways in which elements of the source languages have been modified toward the forms they have assumed in modern English.

30-31 *Western World Literature*—A survey of the principal writers of the ancient and medieval period. Assigned readings are supplemented by lectures on historical background and literary trends.

30-32 *Western World Literature*—A continuation of 30-31. This course is concerned with writers from the late sixteenth century to the present.

30-33 *Survey of English Literature*—A survey of English literature to 1800. After a brief study of the social and political background of each literary period, the writing of the period is considered, and the more important writers are studied and read in detail. The purpose of the course is to give the student an appreciation of English literature as a whole, and an intimate knowledge of its major figures.

30-34 *Survey of English Literature*—A survey of English literature from 1800 to the present century. The outstanding writers are read, studied, and related to the general background of nineteenth century England. The purpose of the course is to give the student an understanding of the writers who contributed most to the formation and development of modern literature in England.

30-35 *American Literature to 1860*—A survey of American literature from colonial times to the triumph of the transcendental movement in New England. The work of Bryant, Irving, Cooper, Poe, Emerson, Thoreau, Lowell, Holmes, Longfellow, and Melville will be emphasized.

30-36 *American Literature After 1860*—Continuing 30-35, the course will consider the rise of realism after the Civil War, the development of American humor, the appearance of local color writers, and modern trends since 1900.

30-37 *Saxon and Anglo-Norman Literature*—A survey of the literary production of England from about 600 A.D. to 1200. All the selections are read in modern English translations, but attention is given to the language characteristics of early and late West Saxon and Anglo-Norman writings.

30-38 *English Literature from 1200 to 1600*—A reading course to acquaint the student with the dominant types of literature during the Middle English and early modern period: lyrical, narrative, and satirical poetry; mystery and miracle plays, ballads; and prose romances.

30-39 *The Seventeenth Century in England*—An historical survey of the literary developments during the first half of the seventeenth century. Assigned readings in drama, lyrical poetry, and criticism are supplemented by lectures on general trends and minor authors not represented in the readings.

30-40 *The Seventeenth Century in England*—A continuation of 30-39 with special attention to the later works of Milton, the poetry of Dryden, and the theater of the Restoration.

30-41 *The Eighteenth Century in England*—An historical survey of the literary developments during the first half of the eighteenth century: the rise of popular journalism; the sentimental comedy; satire and realistic narrative; the beginnings of the novel.

30-42 *The Eighteenth Century in England*—A continuation of 30-41: the age of Johnson; late eighteenth century poets, novelists, and dramatists.

30-43 *Nineteenth Century Prose*—An examination of significant nineteenth century writers and their relation to the social, political, and literary currents of the time. The first semester will include consideration of such background workers as Paine and Godwin, the establishment of the great quarterlies, and the Romantic essayists, Lamb, Hazlitt, and DeQuincey.

30-44 *Nineteenth Century Prose*—A continuation of 30-43. Writers to be studied include Carlyle, Newman, Ruskin, Arnold, Morris, Huxley, Pater, and Stevenson.

30-45 *Nineteenth Century Poetry*—A study of Romanticism, its origins, its conflict with classicism, and its contributions to contemporary and later culture. The poetry of Wordsworth, Coleridge, Byron, Shelley, and Keats will be examined appreciatively and critically.

30-46 *Nineteenth Century Poetry*—A study of the Victorian era with emphasis on Browning and Tennyson as artists and as interpreters of life. Lesser poets to be considered include Arnold, Clough, and the Pre-Raphaelites.

30-47 *The Modern Novel*—A survey of the modern and contemporary English and American novel, with emphasis on trends and changes in content and technique. Representative novels are read, and a few novelists are studied in detail.

30-48 *The Modern Drama*—A survey of English and American drama since 1900, considering representative plays and major dramatists and tracing the relationship between drama and history in the twentieth century.

30-49 *Modern Poetry*—A survey of the principal developments in the prosody, substance, and theory of poetry in England and America since 1912. The chief emphasis of the course will be on the work of the major poets of the period.

30-51 *Introduction to Journalism*—This course treats the functions of the editorial department and the general tasks of an "inside" man. The student is given extensive practice in the re-writing of news stories.

30-52 *Introduction to Journalism*—The problems of reporting and news-writing, with written assignments in all types of spot news reporting.

30-53 *Techniques of Journalism*—Editing the news. The writing of editorials, feature articles, and columns.

30-54 *Techniques of Journalism*—A general practice course in newspaper writing, the covering of special assignments, and editorial problems.

30-61 *Shakespeare*—The Elizabethan period, sixteenth century London, the Shakespearean stage and audience, and the actors' companies will be discussed. Shakespeare's life and his development as a dramatist will be carefully considered. Five plays will be intensively studied.

30-62 *Shakespeare*—Lectures will be given on Shakespeare's language, the text of the plays, Shakespearean criticism, editors' problems, etc. Four plays will be intensively studied. The sonnets will be read and discussed.

30-63 *Chaucer*—A study of the *Canterbury Tales*, with careful training in Middle English vocabulary and the rhythms and devices of Chaucer's poetry.

30-64 *Chaucer*—A continuation of 30-63, principally concerned with *Troilus and Criseyde*, *The House of Fame*, *The Parliament of Fowls*, and some parts of *Boece*.

30-71 *Seminar*—Independent investigation of a selected topic together with intermediate research reports. May be elected with the consent of the department by qualified seniors majoring in English.

30-72 *Seminar*—A continuation of 30-71. A final report is required which summarizes the research of the year.

Fine Arts

27-01 History of Ancient Art—Designed to cultivate a knowledge and appreciation of architecture, sculpture, painting, and the minor arts of ancient times, the art of early man, the art of Egypt, Sumeria, Assyria, Babylonia, Crete, Greece, and Rome. Lectures are illustrated by lantern slides and include an analysis of the tools, techniques, and materials used by ancient artisans.

27-02 History of Early Christian and Medieval Art—A study of the early Christian Church, Christian symbolism, Byzantine art, and a survey of Gothic architecture. Lectures are illustrated with lantern slides and include an analysis of construction methods and techniques, and the materials used by builders, sculptors, and painters of the times. Although a continuation of 27-01, the latter is not a prerequisite.

27-03 History of Renaissance Art—A survey of Renaissance art, the course concentrates on a study of Italian Renaissance painting and traces the spread of the art to other European countries. Lectures include detailed discussions on materials, techniques, design, and composition. The work of the course includes study in local museums. Although a continuation of 27-02, the latter is not a prerequisite.

27-10 History of American Art—After a review of classic forms, this course aims at acquainting the student with the development of American art from the 17th century to contemporary times. Students are expected to supplement their classroom work with visits to local museums and to places of historical importance in and about Boston and to make written reports upon such surveys.

Geology

13-01 General Geology—A study of earth movements and various terrestrial applications of solar energy. Lectures on fundamental general facts as to origin and movements of the earth, weathering, work of winds, underground and surface waters, glaciers and the glacial period, lakes and swamps, and vulcanism.

13-02 General Geology—Course 13-01 is continued with such topics as mountain formation, oceans, oceanic life, atmosphere touching upon meteorology. A considerable portion of time is given to the study of igneous, sedimentary and metamorphic rocks, supplemented by laboratory and field work.

13-03 Historical Geology—A review of the beginning of the earth, its development and historical significance of rock characters. This is followed by a study of the pre-Cambrian Paleozoic and the early Paleozoic sub-era.

13-04 Historical Geology—Continuation of 13-03 taking in the late Paleozoic sub-era, and the Mesozoic and Cenozoic periods, and continuing through the geologic history of man.

Government

22-01 *American Government* — The organization, functions, constitutional powers, and limitations of the United States Government.

22-02 *American Government* — An analysis of the legislative, executive, administrative, and judicial machinery of the United States Government under the party system.

22-03 *American Government* — Functions and types of organization of state and municipal governments in the United States.

22-08 *Current Political Issues* — Analysis and background of current local, national, and international political issues.

22-11 *Foreign Governments* — The governments of France and England and the development of the British Commonwealth of Nations.

22-12 *Foreign Governments* — The governments of Germany, Italy, the U. S. S. R. and others as time permits. The totalitarian background and postwar developments are stressed.

22-13 *Political Theory* — Ancient and medieval political ideas in Europe from Plato to Machiavelli.

22-14 *Political Theory* — The concepts of sovereignty, democracy, liberty, and absolutism as expressed in the works of political thinkers since the sixteenth century.

22-15 *American Constitutional Law* — The constitutional principles of American government as developed through judicial interpretation.

22-16 *American Constitutional Law* — The relationship of constitutional law to current problems in the United States.

22-17 *International Politics* — The geographic, economic, ideological, and technological factors influencing the course of international relations.

22-18 *International Organization* — The background, structure, functions, and efficacy of international organizations, especially of the League of Nations and the United Nations.

22-20 *Public Administration* — The general principles of public administration in modern government with emphasis on the organization and operation of administrative agencies in the United States.

22-21 *Public Administration* — The formulation of administrative policy, administrative adjudication, personnel management, budgeting and accounting, purchasing, and planning.

22-22 *International Law* — The nature, basis, and authority of the law of nations; the relation of international law to municipal law; the law of treaties; the jurisdiction of states, and the influence of political and legal theories upon the development of international law.

22-23 *International Law* — Specific phases of the laws of war and peace.

History

23-01 *Western Civilization* — Prehistoric cultures and the civilizations of the ancient Near East and Greece. Emphasis is placed upon intellectual, social, economic, artistic, and religious developments.

23-02 *Western Civilization* — Roman and medieval history with emphasis as in 23-01.

23-03 *Western Civilization* — The Renaissance and Reformation in Europe and the age of science to 1815. The Newtonian age of enlightenment is stressed.

23-04 *Western Civilization* — Europe from 1815 to the present with emphasis upon social, economic, and religious developments in the light of Newtonianism and the Darwinian intellectual revolution.

23-08 *The Contemporary Orient* — The renaissance in twentieth century Asia based upon the impact of western science on the age-old culture patterns found in India and the Far East.

23-11 *Europe 1789-1870* — The logical fulfillment of the Newtonian age of enlightenment in the French Revolution and the subsequent struggle between the forces of that enlightenment and the reaction to it.

23-12 *Europe since 1870* — The impact of the Darwinian intellectual revolution upon Europe with resultant social, economic, religious, and political changes involving the twentieth century World Wars and revolutions.

23-13 *England to 1688* — The political, social, religious, economic, and constitutional development of England to the Revolution of 1688.

23-14 *England since 1688* — England through the age of Newtonian enlightenment and the age of reform toward the development of a collectivist democracy.

23-15 *English Constitutional History* — The English constitution and common law; local government versus central government; the origin and growth of Parliament; the development of the British cabinet system; and a comprehensive study of statutes and documents.

23-16 *American Constitutional History* — The historical development of the United States Constitution with particular emphasis on its progressive adjustment to the changing social and economic order.

23-17 *The United States to 1865* — The conflicting political, social, and economic ideals leading to the American Revolution and the formation of the Republic; Hamiltonianism versus Jeffersonianism and the development of democracy; a comprehensive study of sectionalism leading to the Civil War.

23-18 *The United States since 1865* — The Reconstruction; the rise of industrialism and the social and economic problems of industrialism; solutions attempted from the Greenbackers through the New Deal. American international problems in Latin America, the Far East, and in Europe.

23-19 *Latin America to 1800* — The European background of Spanish and Portuguese colonization in the New World, the exploits of the conquistadores, the Indian civilizations, colonial institutions, and the forces which gave rise to the revolutions in the early 19th century.

23-20 *Latin America since 1800* — The Wars of Independence and the rise of the Latin American republics together with the international relations of these countries, particularly with the United States.

23-25 *Eastern Civilization to 1500* — The development of the civilizations of India, Persia, China, and Japan to the sixteenth century A.D.

23-26 *Eastern Civilization since 1500* — The impact of western civilization from the sixteenth to twentieth centuries upon India, Persia, China, and Japan with an analysis of the arising cultural conflict or synthesis.

Mathematics

14-01 *College Algebra* — The study of algebra is scheduled to begin with the solution of the quadratic equation, simultaneous quadratics, and equations in quadratic form. However, a rapid but thorough review of the fundamentals of algebra precedes this. The solution of the quadratic is followed by a detailed study of the theory of exponents. Then follow radicals, series, variation, inequalities, and the elementary principles of the theory of equations. Considerable time is given to plotting and the use of graphs in the solution of equations. The elementary theory of complex numbers is also covered.

14-02 *Trigonometry* — This is a complete course in trigonometry and should enable the student to use all branches of elementary trigonometry in the solution of triangles as well as in the more advanced courses where the knowledge of trigonometry is essential. Some of the topics covered are the trigonometric ratios; inverse functions; goniometry; logarithms; circular measure; laws of sines, cosines, tangents, half angles; solution of oblique and right triangles; transformation and solution of trigonometric and logarithmic equations. Considerable practice in calculation of practical problems enables the student to apply his trigonometry to problems arising in practice at an early stage. Additional work, graphical and algebraic, is done with the complex number, introducing De-Moivre's theorem and the exponential form of the complex number.

14-03 *Analytic Geometry* — This being a basic course in preparation for any further study of mathematics, it requires a thorough knowledge of the fundamentals of algebra. The course covers cartesian and polar co-ordinates; graphs; the equations of simpler curves derived from their geometric properties; thorough study of straight lines, circles, and conic sections; intersections and curves; transformation of axes; plotting and solution of algebraic equations of higher order and of exponential trigonometric and logarithmic equations; loci problems. The general equation of the second degree is thoroughly analyzed in the study of conic sections.

14-04 Introduction to Calculus—Explicit and implicit functions, dependent and independent variables, some theory of limits, continuity and discontinuity are given special attention from both the algebraic and the geometric points of view. Some theorems on the infinitesimal are introduced, and a study is made of infinity and zero as limits. Relative rates of change, both average and instantaneous, and the meaning of the slope of a curve follow. The differential and the derivative as applied to algebraic functions with the geometric interpretation are then studied. Tangents to curves of the second degree follow here. Simple applications with interesting practical problems help to develop the interest here and lay a solid foundation for the study of the calculus. The introduction of the differential at the same time with the derivative helps considerably to bridge the large gap which usually exists when the student passes from the study of the elementary analytic geometry to the infinitesimal of calculus.

14-05 Differential Calculus—The differential is introduced and defined at the outset of the course together with the derivative; geometric and practical illustrations are given of both; and both are carried along throughout the course. The work in the course consists of differentiation of algebraic, trigonometric, exponential, and logarithmic functions, both explicit and implicit; slopes of curves, maxima and minima with applied problems; partial differentiation; derivatives of higher order; curvature; points of inflection; related rates; velocities, acceleration; expansion of functions; series. Although the subject matter deals with considerable theory, constant sight is kept of the practical application of the theory. The geometric interpretation of every new subject is carefully defined and problems are continually solved dealing in practical applications of the theory in geometry, physics, and mechanics.

14-06 Integral Calculus—This is a continuation of Calculus 14-05, and deals with integration as the inverse of differentiation as well as the limit of summation. The topics covered are methods of integration; use of integral tables; definite integrals; double and triple integrals; areas in rectangular and polar co-ordinates; center of gravity; moment of inertia; length of curves; volumes of solids; areas of surfaces of revolution; volumes by triple integration; practical problems in work, pressure, etc., depending on the differential and integral calculus for solution; solution of simpler differential equations.

14-07 Differential Equations I—The elementary theory and solution of ordinary differential equations is offered here as a general course in mathematics. Although principally a problem course in solving differential equations, properties of equations and of their solutions are deduced, and applications to the various fields of science are analyzed.

14-08 Differential Equations II—Special cases of first order equations are considered, and a fuller treatment of first order equations of higher degree leads to a consideration of envelopes, special loci, and particular

curves. The general second order linear equation is studied, and the several well-known methods of attack are presented. Solution in series form of equations whose primitives are not made up of classified functions is studied. Elementary partial differential equations of the first and second orders, leading to a presentation of Fourier's series, conclude the course.

14-10 Analytic Mechanics—Fundamental concepts and methods of classical mechanics. Composition and resolution of force systems; centroid and moment of inertia; equilibrium; relative velocity and acceleration; energy, impulse, momentum, and work.

If time permits, some study is made of Lagrange equations and Hamilton's principles.

14-11 Curve Analysis—The topics covered are analysis of empirical data, curve fitting, least squares, nomographic charts and general analysis of equations of curves.

14-12 Modern Geometry—The course offers a brief outline of the history of geometry, especially in the nineteenth century, analysis of geometry of the triangle and circle; systems of co-ordinates; linear dependence; transformations; principle of duality; poles and polars; harmonic division; cross ratios; and conical projection. Special theorems include those of Desargues, Pascal, and Brianchon.

14-13 Spherical Trigonometry—This is a complete course in the study of spherical trigonometry, solving right and isosceles triangles; Napier's rules; laws of sines; cosines, half-angles, and half-side formulas; Napier's analogies. A detailed solution of oblique spherical triangles including areas follows. Considerable time is spent on the celestial sphere and the astronomical triangle and on navigation, calculation of latitude and longitude, bearing, and time.

14-14 History of Mathematics—In this course a survey is made of the development of the various branches of mathematics, and attention is given to the lives of men who have made outstanding contributions to mathematical science.

14-15 Advanced Calculus—The course is essential for all students who expect to study more advanced work in the field of mathematics. The various topics include special methods of integration, change of variable, hyperbolic functions, continuity and related theorems, theory and application of the infinitesimal, Taylor's series, infinite series in two variables, Fourier series, applications of partial differentiation envelopes, evolutes.

14-16 Advanced Calculus—This is a continuation of 14-15. The types of topics covered are maxima and minima in three dimensions, Jacobians, curvilinear co-ordinates, special definite and improper integrals, differ-

entiation of integrals, Beta Function, Gamma Function, Bessel's Function, line integrals, surface integrals, complex variable, and elliptic integrals and functions.

14-17 Infinite Series—Study of limits; infinite series; tests of various types of convergence and divergence; algebraic operations with series; integration and differentiation of series; applications and use of special series, as power and Fourier series. Some solution of differential equations as done by infinite series.

14-18 Theory of Equations—This course is devoted more to the theory and analysis of equations and roots than to actual solutions. The properties of polynomials and continuity are studied. The complex number in algebraic, geometric, and exponential form is reviewed. The solutions of equations of higher degree are discussed, discriminants analyzed, and various theorems on roots studied. Proof is given of the fundamental theorem of algebra. A complete analysis of n equations in m unknowns is made, including the theory and use of determinants. The relations of roots and coefficients and some symmetric functions are included.

14-20 Special Topics in Mathematics—Here the student practices the application of his mathematics to special applied problems in the various fields of science. The course may require considerable reference work in special topics chosen so as to be of particular interest to the individual student. (For seniors only.)

14-21 Basic Mathematics I—A course in algebra review in preparation for work in trigonometry and analytic geometry. Many topics covered in high school are reviewed, and further work is done in the more advanced topics. The reasoning underlying the processes of algebra is emphasized so that the student will find the work in algebra is not memory work but is a process of simple, logical reasoning.

14-22 Basic Mathematics II—A course in plane trigonometry, including logarithms, covering the usual work through the solution of triangles and applications.

14-23 Basic Mathematics III—This course continues on with more special topics from the two preceding basic mathematics courses. It also introduces the subject of analytic geometry with considerable emphasis on the plotting of graphs and the analysis of the equations covered in the two preceding courses.

14-25 Mathematics of Finance—This course starts with the algebra and logarithms necessary for the understanding and use of the formulas developed in business mathematics. Then the subjects covered are interest, discount, annuities, sinking funds, depreciation, amortization, valuation of bonds, the use of graphs, the interpretation of statistical data, and insurance.

14-28 Probability and Statistics—The course starts with the elements of probability theory for continuous and discrete distributions. In statistics the representation of data, averages, measures of dispersion, the normal curve, correlation, large sampling theory, and curve fitting are covered with emphasis on applications.

14-29 Mathematical Statistics—This is a continuation of course 14-28. The emphasis is on the mathematical theory of statistics. The topics covered are generalized frequency curves, joint distributions of two variables, multiple and partial correlation, large sampling theory, small sampling theory, "student's" distribution, and the chi-square distribution.

Modern Languages

French

31-11 Introduction to French Literature—This course aims to provide a linguistic and cultural background for the study of French literature, besides acquainting the student with representative works of some of the more important French authors. The work of the first term consists of a thorough review of grammar, phonetic drill, and oral practice based on suitable texts.

31-12 Introduction to French Literature—A continuation of 31-11. Most of the time is devoted to the study of literary selections dealing with French customs, institutions, geography, and history, with oral practice based on the material read. Vocabulary building, study of idioms, and outside reading.

31-13 Introduction to French Literature—A continuation of 31-12. Selected readings from representative modern authors. Oral practice and memorizing of selected passages. Outside reading.

31-14 Introduction to French Literature—A continuation of 31-13. Conversational practice. The subject matter will deal with the ordinary activities of everyday life and contemporary problems.

31-21 Modern French Literature—A study of the chief trends in French literature since 1850. Significant works of representatives of the various literary movements are read and analyzed. The course is concerned mainly with the short story and the novel. Collateral reading and reports.

31-22 Modern French Literature—A continuation of 31-21. The major part of the course is devoted to the study of the drama, with the remainder given to French verse of the period. Collateral reading and reports.

31-23 French Classicism—This course is designed to furnish a comprehensive survey of the background and development of French literature of the seventeenth century and to aid the student in a critical interpretation of the most significant works of the period. The reading is mainly from the works of Malherbe, Descartes, Pascal, La Fontaine, and Boileau. Collateral reading and reports.

31-24 French Classicism—A continuation of 31-23. The dramatic works of Corneille, Molière, and Racine receive the major attention.

31-25 French Romanticism—A study of the origins and development of the Romantic movement in French literature. The readings include significant selections from the novels of the principal writers of the Romantic school, as well as some of the more important Romantic dramas.

31-26 French Romanticism—Continuing 31-25, the course pursues further the study of the Romantic drama. The latter part of the term is devoted to the reading of selections of poetry from the works of Lamartine, Hugo, Musset, and others.

31-31 Advanced Composition and Conversation—The work of this course will include, besides written and oral composition, a systematic review of the most important and the more difficult points of French grammar, a brief historical survey of the development of the French language, and a practical study of French phonetics and pronunciation. Current events and other matters of contemporary interest will furnish the topics for discussion and conversation.

31-32 Advanced Composition and Conversation—A continuation of 31-31.

German

32-01 Elementary German—A beginner's course stressing the essentials of grammar, practice in pronunciation, and progressive acquisition of basic vocabulary and current idiomatic expressions.

32-02 Elementary German—A continuation of 32-01 with emphasis on the more difficult points of German grammar. Reading of simple texts.

32-03 Elementary German—A continuation of 32-02. Reading of texts of progressively increasing difficulty, with oral and written exercises on the material read. Some of the texts are assigned for outside reading.

32-04 Elementary German—A continuation of 32-03. Practice in conversation dealing with the various aspects of everyday life.

32-11 Introduction to German Literature—This course aims to provide a linguistic and cultural background for the study of German literature, besides acquainting the student with representative works of some of the more important German authors. The work of the first term consists

of a thorough review of grammar, phonetic drill, and oral practice based on suitable texts.

32-12 Introduction to German Literature—A continuation of 32-11. Most of the time is devoted to the study of literary selections dealing with German customs, institutions, geography, and history, with oral practice based on the material read. Vocabulary building, study of idioms, and outside reading.

32-13 Introduction to German Literature—A continuation of 32-12. Selected readings from representative modern authors. Oral practice and memorizing of selected passages. Outside reading.

32-14 Introduction to German Literature—A continuation of 32-13. Conversational practice. The subject matter will deal with the ordinary activities of everyday life and contemporary problems.

32-15 Intermediate German—In this course several texts of average difficulty are read and studied. The work includes a thorough review of grammar, oral practice based on the reading matter, memorizing of selected passages, dictation, study of idioms, vocabulary building, and outside reading.

32-16 Intermediate German—A continuation of 32-15, with an increasing amount of both class and outside reading.

32-21 Modern German Literature—A survey of the main currents of German literature since 1880. Representative works of the leading authors of the period are read and interpreted. The course deals chiefly with the short story and the novel. Collateral reading and reports.

32-22 Modern German Literature—A continuation of 32-21. The drama and poetry receive the main emphasis. Collateral reading and reports.

32-23 The Classical Period of German Literature—This course aims to trace the development of German literature during the second half of the eighteenth century beginning with the Storm and Stress period. The works of Lessing, Goethe, and Schiller will receive the major emphasis.

32-24 The Classical Period of German Literature—A continuation of 32-23. The readings will consist mainly of the later works of Goethe and Schiller.

32-25 German Literature of the Nineteenth Century—This course will consider the chief tendencies in German literature from the beginning of Romanticism to the coming of Naturalism. Representative works of the principal writers of the period will be read and analyzed.

32-26 *German Literature of the Nineteenth Century*—A continuation of 32-25. Among the works to be read will be some of the outstanding dramas of the latter half of the century.

32-31 *Advanced Composition and Conversation*—The work of this course will include, besides written and oral composition, a systematic review of the most important and the more difficult points of German grammar, a brief historical survey of the development of the German language, and a practical study of German phonetics and pronunciation. Current events and other matters of contemporary interest will furnish the topics for discussion and conversation.

32-32 *Advanced Composition and Conversation*—A continuation of 32-31.

Spanish

33-01 *Elementary Spanish*—A beginner's course stressing the essentials of grammar, practice in pronunciation, and progressive acquisition of basic vocabulary and current idiomatic expressions.

33-02 *Elementary Spanish*—A continuation of 33-01, with emphasis on the more difficult points of Spanish grammar. Reading of simple texts.

33-03 *Elementary Spanish*—A continuation of 33-02. Reading of texts of progressively increasing difficulty, with oral and written exercises on the material read. Some of the texts are assigned for outside reading.

33-04 *Elementary Spanish*—A continuation of 33-03. Practice in conversation dealing with the various aspects of everyday life.

33-11 *Introduction to Spanish Literature*—This course aims to provide a linguistic and cultural background for the study of Spanish literature, besides acquainting the student with representative works of some of the more important Spanish authors. The work of the first term consists of a thorough review of grammar, phonetic drill, and oral practice based on suitable texts.

33-12 *Introduction to Spanish Literature*—A continuation of 33-11. Most of the time is devoted to the study of literary selections dealing with Spanish customs, institutions, geography, and history, with oral practice based on the material read. Vocabulary building, study of idioms, and outside reading.

33-13 *Introduction to Spanish Literature*—A continuation of 33-12. Selected readings from representative modern authors. Oral practice and memorizing of selected passages. Outside reading.

33-14 *Introduction to Spanish Literature*—A continuation of 33-13. Conversational practice. The subject matter will deal with the ordinary activities of everyday life and contemporary problems.

33-15 *Intermediate Spanish*—In this course several texts of average difficulty are read and studied. The work includes a thorough review of grammar, oral practice based on the reading matter, memorizing of selected passages, dictation, study of idioms, vocabulary building, and outside reading.

33-16 *Intermediate Spanish*—A continuation of 33-15, with an increasing amount of both class and outside reading.

33-21 *Spanish Literature of the Golden Age*—This course deals with the Spanish prose of the sixteenth and seventeenth centuries, particularly the *Don Quixote* and the *Novelas Ejemplares*. Lectures, translation, and collateral reading.

33-22 *Spanish Literature of the Golden Age*—A continuation of 33-21, with emphasis on the drama of Lope de Vega, Tirso de Molina, and Calderon. Lectures, translation, and collateral reading.

33-23 *Modern Spanish Literature*—This course aims to acquaint the student with the literature of Spain during the last quarter of the eighteenth century and the first half of the nineteenth. The chief emphasis is placed on the romantic poetry and drama. Lectures, translation, and collateral reading.

33-24 *Modern Spanish Literature*—A continuation of 33-23, this course is devoted to Spanish literature of the second half of the nineteenth century, with emphasis on the realistic novel. Lectures, translation, and collateral reading.

33-25 *Modern Spanish American Literature*—The purpose of this course is to acquaint the student with the general trends of Spanish American literature. Plays, essays, and novels that reflect the economic and social problems of our neighbors to the south will receive the chief attention. Lectures, translation, and collateral reading.

33-26 *Modern Spanish American Literature*—A continuation of 33-25, this course is devoted to the literature of Mexico and Central America, and particularly the works of Ruben Dario.

33-31 *Advanced Composition and Conversation*—The work of this course will include, besides written and oral composition, a systematic review of the most important and the more difficult points of Spanish grammar, a brief historical survey of the development of the Spanish language, and a practical study of Spanish phonetics and pronunciation. Current events and other matters of contemporary interest will furnish the topics for discussion and conversation.

33-32 *Advanced Composition and Conversation*—A continuation of 33-31.

Philosophy

NOTE: In addition to the courses listed, 26-13 and 26-14 Social Ethics may be counted as courses in Philosophy.

24-01 Introduction to Philosophy—This introductory course combines the historical and systematic approaches to the subject. The historical treatment includes a survey of the chief philosophers and the development of basic philosophical ideas. The systematic treatment presents the several types of philosophy, such as realism, materialism, idealism, and pluralism. The place of philosophy is considered in its relation to ethics, religion, and natural sciences. The course both acquaints the student with facts about philosophy and trains him to think philosophically.

24-02 Problems of Philosophy—The chief systems of thought are applied to what may be termed the persistent problems of philosophy. The problems are to be found in the fields of epistemology, teleology, and metaphysics. The following topics suggest representative problems which will be studied: the relation between mind and body, the nature and extent of freedom of the will, the validity of knowledge, and the bearing which the more recent views in physics and psychology have upon related philosophical problems.

24-03 History of Philosophy—Beginning with the early Greek age period, the course traces the development of philosophical thought through the patristic and scholastic periods. A study is made of the transition from medieval to modern philosophy.

24-04 History of Philosophy—The first half of the course is a study of the period from Bacon to Kant; the second half begins with the time of Kant and ends with a consideration of present-day philosophers and their systems of thought.

24-05 Philosophy of Religion—Fundamental questions of religious belief are examined in the light of philosophy. Modern religions are compared with respect to their views on the nature of the Deity, the meaning of life, and the relationship between man and God. Further topics for study include the question of the validity of mysticism and intuitive knowledge of religious truth, the immortality of the soul, the meaning of the supernatural, the presence of natural evil, and the relation of morality to religion.

24-06 Logic—Formal logic is subordinated in this course to the more practical consideration of the methods of critical and reflective thought. Common fallacies in logic are indicated, and the student is given frequent exercises in correct reasoning. Attention is given to the principles of induction, deduction, verification, syllogism, and assumption. To assist the student to think clearly and correctly is the essential purpose of this modified course in logic.

Physical Education

16-10-11-12 Physical Training — All first year men students are required to take Physical Training. Health, strength, and vitality do not come by chance but by constant attention to those factors involved in their development. It is very essential for the student to acquire good habits of living.

The work in the course includes a formal calisthenic program, special exercise classes for the correction of postural defects, participation in the regular athletic program, including baseball, basketball, football, hockey, track, and many types of informal games. All members of the class are also required to learn to swim.

Students wishing to be excused from Physical Training because of physical defects are required to present a petition to the faculty supported by a physician's certificate.

16-21 Principles of Physical Education—The course considers the place of physical education in the educational program in the United States. The development of physical education programs based on the changes in society from primitive to modern times is discussed, careful attention being given to the needs of the individual, as well as to the needs of the group. Relationship between medical service and the physical education department is considered, and methods of co-ordination between these two important departments are investigated. The history of physical education, in so far as it affects the modern program, is included in the course. Factors such as economic, social and political influences which have an important effect on the conduct of the program are also considered. School health programs are discussed, with particular emphasis upon the medical and physical examinations and tests and the procedures which follow. Diagnostic and remedial techniques, classroom hygiene, and principles of preventive and corrective exercise are discussed. The course also includes a consideration of the proper place occupied by interschool and intercollegiate athletics in the physical education program.

Required of all students electing Physical Education as a minor field.

16-22 Play and Recreation—The purpose of this course is to prepare students for leadership of leisure-time activities. It considers the biological and sociological aspects of play and its increasing importance in modern life. From a practical point of view the course deals with the problems faced by the director of leisure-time activities in the community, in the school, or on the playground. The course should be of special interest to students who contemplate entering social work or teaching.

16-23 History of Physical Education—To provide a valuable background for students in this field, this course traces the whole history of physical education from the days of the Greeks and the Romans up to the present. Attention is given to a number of special systems of training which have been developed in Europe.

The course is required of all students electing Physical Education as a minor field.

16-24 Administration of Physical Education—This course is designed to acquaint students in the field of physical education with many of the administrative problems which are likely to arise in connection with their work. The subject matter includes a consideration of the objectives of the physical education program, personnel required, and various allied subjects, such as gymnasias, athletic fields, and the construction and maintenance of these units. The conduct of the athletic program including requirements for equipment, arrangements of schedules, coaching, meets, etc., is also included.

Required of all students electing Physical Education as a minor field.

16-25 Football—This course is designed to furnish the student interested in football coaching with a thorough knowledge of the sport. Careful consideration is given to the fundamentals in discussing the plays of each position in the line and backfield. Various well-known offensive and defensive systems are discussed for the purpose of considering their general merits, as well as adaptations to particular situations. Training and conditioning, rules and interpretation, and officiating are given proper attention.

16-26 Track and Field Events—The course considers the care and training of track athletes. Practice schedules, selection of material, conduct of meets, etc., are discussed. The viewpoint from which the topics are treated is that of the student of coaching technique. In connection with this course, action pictures taken from actual performances by world champions, together with moving pictures, are of great value in demonstrating the style and technique of track and field events.

16-27 Basketball and Baseball—Various systems in use throughout the country are compared and contrasted. Team play, offense, defense, signal systems, training and conditioning, rules, and officiating are among the topics studied. The student in this course should acquire a thorough knowledge of all phases of the sports.

Physics

15-01 Physics—A study of the fundamental principles of mechanics. The topics treated are kinematics, dynamics, and statics.

15-02 Physics—This course completes the study of mechanics, and starts the subject of electricity and magnetism. Energy, power, machines, vibratory motion, elasticity, fluids, magnetism and electrostatics are studied.

15-03 Physics—Continues the subject of electricity. The topics covered are resistivity, circuits, electromagnetism, magnetic circuits and condensers.

15-04 Physics—Completes the study of electricity. Basic principles of alternating current generation and series circuits, thermoelectric, photoelectric, and thermionic effects, and electromagnetic radiation are the topics studied.

15-05 Physics—A first course in the study of light, covering all the details within the scope of standard college texts on the subject. Lectures, demonstrations, and laboratory experiments on selected topics in mechanics and light.

15-06 Physics—A study of wave motion, sound and heat. Lectures, demonstrations, and laboratory experiments, the latter covering topics in sound, heat, and electricity.

15-07 Survey of Physical Sciences—This sequence of courses is designed to give students who are majoring in nonscience fields an understanding of the contributions and place of the physical sciences in contemporary civilization. In this term astronomy, light, and sound are discussed. The classwork will be supplemented by demonstrations and motion pictures.

15-08 Survey of Physical Sciences—A continuation of 15-07 with consideration of geology, meteorology, and heat.

15-09 Survey of Physical Sciences—In this term consideration is given to mechanics and electricity.

15-10 Survey of Physical Sciences—This term is devoted to the topic of chemistry.

15-11 General Physics—A study of the fundamental principles of mechanics. Lectures and demonstrations only.

15-12 General Physics—The topics covered are heat, wave motion, sound and light. In addition to lectures and demonstrations the student performs experiments in the laboratory illustrating the above topics and those covered in 15-11.

15-13 General Physics—A thorough study of the basic principles of electricity and magnetism. Lectures, demonstrations, and laboratory experiments.

15-14 Advanced Physics—Selected topics in electricity, magnetism, and basic electronics. For chemistry majors only.

15-15 Advanced Physics—Selected topics in optics. For chemistry majors only.

15-16 Electricity and Magnetism—Selected topics not covered in 15-03 and 15-04 are studied, including work in electrostatics, magnetism, direct and alternating currents, electrical units, and Maxwell's equations. This course serves as an intermediate between Courses 15-04 and 15-24.

15-20 Optics—This is a course in the more advanced forms of geometrical optics and the study of physical optics.

- 15-21 *Optics*—Continuing 15-20, a detailed study is made of physical optics with some time spent on modern spectroscopic theory.
- 15-22 *Acoustics*—A complete mathematical study of the modes of vibration of strings, pipes, membranes, and a consideration of vibrating systems in general.
- 15-23 *Acoustics*—A course in the application of the principles of 15-22 to the problems of speech, audition, sound, filters, musical instruments, and the acoustics of auditoriums.
- 15-24 *Electronics*—This course is designed to make the student familiar with the principles, operation, and application of electronic devices. Direct current circuits, alternating current circuits, measuring devices, thermionic tubes, and electronic principles are studied.
- 15-25 *Electronics*—Continuing the work of the first term, audio amplifiers and oscillators, high frequency amplifiers and oscillators, frequency measurements, photo cells, detectors, radio, and some special applications are studied.
- 15-26 *Modern Physics*—Consideration is given to molecular relations, and then to atomic structure, quantum mechanics, and allied subjects.
- 15-27 *Modern Physics*—Radioactivity, artificial transmutation, nuclear structure, and the devices for studying these phenomena are here presented. Some time is also given to the Stark, Zeeman, and Raman effects, and to X radiation and cosmic rays.
- 15-28 *Electrical Instruments*—This is a laboratory course to acquaint the student with the numerous electrical and electronic instruments that are used in research. Their correct use and limitations are carefully studied. Use is made of common DC and AC instruments, vacuum tube voltmeters of various types, audio oscillators, radio frequency generators, cathode ray oscilloscopes, audio and radio frequency bridges, and impedance bridges. The latter part of the course covers the use of several of the instruments in each problem.
- 15-29 *Radio Communications*—This course is designed to provide a thorough knowledge of the radio communication system from the microphone to the loud-speaker, by tying together the various components of the system as studied in previous courses. Modulators, radio frequency amplifiers, and antennas will be studied from the transmitter end of the system. Then the propagation problems at the various frequencies, the superheterodyne receiver, the basic communication laws that govern intelligence vs. band width, and the sources of interference to radio systems will be covered.
- 15-65 *Thesis*—See statement on Theses, page 118.
- 15-66 *Thesis*—A continuation of 15-65.

Psychology

25-01 Introductory Psychology—An elementary study of the structure, functions, and laws of mental life. The course considers the special relation of psychology to the social sciences; the scientific approach to a study of mental processes; the dynamics of animal and human behavior; the relationship between the individual's environment, his response mechanisms, and his personality; the biological and social sources of drives, desires, wishes, and incentives and their relation to interest, effort, adjustment, and maladjustment.

25-02 General Psychology—The course makes a systematic study of the psychological mechanisms underlying human behavior and it presents the more important theories of thought and action. It deals with the neurophysiological and psychological mechanisms involved in learning, memory, thought, imagination, motivation, emotion, sensation, and perception; the nature and extent of individual differences; aptitudes and aptitude testing. It emphasizes the practical application of psychological principles to mental and social adjustment. It presents the main problems in psychology and gives the points of view of the different schools of thought.

25-09 Statistics in Psychology—An introductory course dealing with elementary descriptive statistics, graphs, significant numbers, measures of central tendency and dispersion, types of distributions, and elementary correlation. Laboratory work in computational techniques and the use of computing machines will be included. (Permission of instructor required.)

25-10 Statistics in Psychology—An advanced course in which consideration will be given to product moment, biserial, tetrachoric, rank order, multiple and partial correlation. Errors of sampling, statistical hypotheses, and tests of significance will be treated with reference to experimental methods in psychology and education. (Permission of instructor required.)

25-11 Individual Differences—This course is a prerequisite to most advanced courses. Differences in behavior patterns will be considered in relation to environment, heredity, race, and training. An introduction to statistical methods will be included.

25-12 Experimental Psychology—The Psychology of Learning. An experimental study of the learning process. The laboratory work will center around the conditions which affect learning. Examples of such conditions are the effect of drugs, the relation of learning to length of lesson, amount and difficulty of material, and the mode of attack. Laboratory reports are required.

25-13 Experimental Psychology—The Perceptual Process. Attention, association, thinking and feeling are investigated experimentally. The primary purpose of the experiments is to acquaint the student with procedures and techniques involved in the study of the above concepts. Laboratory reports are required.

25-14 Experimental Psychology—The Senses. The structure and function of the senses, the nature of adequate stimuli, and the laboratory techniques for studying the sensory processes are the chief topics. Laboratory reports are required.

25-15 Educational Psychology—This course will be approached from the professional educator's point of view. The principles of behavior and the physical and motor, emotional, social, mental, and intellectual development will be discussed. Such information will be oriented to education and to the principles of learning. It will deal with the implication of psychology for both.

25-16 Educational Psychology—This course will emphasize the psychology of motivation. Attention will be given to educational problems. The effects of social demands, family pressures, economic factors, emotionality, school demands, variations in intelligence, etc., will be related to the process of education and learning. Testing, the control of learning, teacher-pupil relationships, and problems of mental hygiene will be considered. Some case material will be presented from time to time.

25-17 Measurements—Intelligence Testing. In addition to regular class-work, the student will be supervised in the administration of individual intelligence tests such as the Stanford-Binet and the Wechsler Bellevue.

25-18 Measurements—Personality Tests. The course will give the student training in the administration and interpretation of selected personality tests.

25-19 Measurements—Trade and Aptitude Tests. The student will receive practical training in the administration, scoring, and interpretation of tests used in vocational and educational guidance.

25-29 Psychology of Personality—Emphasis will be placed on the biological and social factors involved in the development of personality.

25-31 Abnormal Psychology—An account of the disorders of intelligence, association, co-ordination, perception, memory, desires, feelings, and emotions. Consideration will be given sleep, dreams, and hypnosis. Additional material will deal with the relationships of constitution, cultural and social effects, conditioning and learning, to abnormality.

25-32 Abnormal Psychology—Continuation of 25-31. A detailed account of the etiology and symptomatology of pathological habit formation, borderline personalities, classical neuroses, and psychoses. Differentiations will be made between psychological disorders with and without organic involvement. Types of treatment and community resources will be considered.

25-33 Social Psychology—A study of the psychological factors underlying human relations with emphasis upon social motivation, nature and development of groups, social movements and institutions, antisocial behavior, social controls, leadership, co-operation, war, propaganda, racial prejudice.

In addition, the course seeks to elucidate the methods and the techniques which yield trustworthy data regarding social phenomena.

25-34 Child Psychology—A survey of the growth and development of children. The course studies the biological, organic, cultural, and psychological determinants of personality structure and development; the child's conception of the world; the problems of adolescence; the mental and physical characteristics of exceptional children; and the causes of malbehavior.

Special attention is given to the treatment of problem children through a change or modification of the environment, institutional care, and the application of psychological techniques.

25-35 Industrial Psychology—A study of the principles and techniques of psychology in their relation to the problems which affect industrial efficiency. The course includes such topics as training and transfer, fatigue, monotony, motivation, accident prevention, conditions and methods of work, vocational fitness, adjustment, and the techniques of human control.

Special consideration is given to the motives controlling owner and manager of industry and that of the employees; to the conflicts of desire which result; to the emotional appeals which are used to resolve these conflicts; and to the unconscious impulses which are rationalized in idealistic and philosophical formulations.

25-36 Industrial Psychology—A continuation of 25-35.

25-38 Physiological Psychology—A survey of the pertinent physiological fact and theory oriented to the relation of neuro-anatomy and psychology. The structural and functional aspects of receptors, muscles, glands, and nervous tissue (peripheral nerves, spinal cord, and brain) will be emphasized. (Permission of instructor required.)

25-39 Physiological Psychology—A continuation of 25-38. The integrative action of the central nervous system, and the problem of variability of behavior will be the main topics. (Permission of instructor required.)

25-41 Advanced Psychology—The historical background of modern psychology in the light of philosophical, biological, and general scientific antecedents. A critical survey of the experimental and theoretical literature under the heading of learning and memory, thinking and reasoning, work and fatigue, physiological and genetic psychology, feeling and emotion. Psychophysiological techniques for the study of processes involved in sensory and perceptual experiences. Comparative psychology. Biopsychology. Psychometric techniques.

25-42 Advanced Psychology—A critical survey of the various schools, systems, or points of view in modern psychology. A study and critical evaluation of developments in contemporary psychological theory and of articles in current psychological periodicals.

25-61 *Directed Study*—May be elected with the consent of the department by qualified seniors majoring in psychology.

25-62 *Directed Study*—A continuation of 25-61.

25-71 *Seminar*—Required of juniors majoring in psychology.

25-72 *Seminar*—A continuation of 25-71.

25-73 *Seminar*—Required of seniors majoring in psychology.

25-74 *Seminar*—A continuation of 25-73.

Sociology

26-01 *Principles of Sociology*—In presenting a survey of the origins and sources of human society, this study provides orientation for the courses in principles and problems which follow. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors.

26-02 *Principles of Sociology*—Facts and principles basic to a general knowledge of the field of sociology are presented. The origins, forms, and forces of human associations are discussed. Consideration is given the several leading schools of sociological thought. The course is designed to meet the needs of the student who desires only an elementary survey of the subject as well as the student who plans to take advanced courses in social science.

26-11 *Social Problems*—Attention is given the nature, complex causation, and interrelatedness of social problems in general. Cultural change, with its attendant lags, as well as other social forces and conflicts are studied. While sociological theory is occasionally introduced to clarify the problem at hand, the course is essentially practical in character. Such problems as poverty and unemployment, race antagonisms, population pressures, and the broken home are considered. Optional field trips to various institutions give concreteness to the problems studied.

26-12 *Social Problems*—Similar to 26-11 in background and approach, this course deals with the maladjustments and ills of human society. Emphasis is given those pathological conditions which exist in relations between the individual and the group. Typical subjects presented include mental defectiveness and disease, alcoholism and drug addiction, suicide, delinquency and crime, and pathologies of domestic relations. The field trips arranged for this course add to the practical knowledge of the social ills which are studied.

26-13 *Social Ethics*—To clarify the meaning of morality in social relations is the aim of this study. Right and wrong conduct is analyzed in the light of the highest values for human society. Moral laws are discussed, and the various systems of ethics are evaluated. Scientific attitudes are encouraged in order that one's moral judgments may be compatible with one's best reflective thought.

26-14 Social Ethics—Problems arising from differences in moral standards found in the various social groups will be examined. The question of ethical relativism and determinism will be considered. A selected number of specific problems in social ethics will be discussed.

26-15 The Family—The historical development of the family is first traced, after which the course focuses upon the modern family. The monogamic family is contrasted with other types, and such unconventional forms as companionate and trial marriages are evaluated. Then follows an intensive study of family problems. A constructive program is presented for strengthening the family as a basic unit in society.

26-16 Criminology—Delinquency and crime are defined and classified, and their causal factors indicated. The various theories as to what makes criminals are dealt with, and a brief history of crime is sketched. Legal and economic aspects of crime are summarized, but the study is mainly sociological. Attention is paid to the prevention and correction of criminal behavior and to dealing with offenders. Local institutions are visited.

26-17 Urban Sociology—Upon studying the complex human society found in the various cities of the world, this course then turns to an analysis of the modern American city. Its types, social values, and pathological elements are discussed. Methods of city planning are considered. The belief on the part of some sociologists that democracy is doomed by its cities is examined in the light of typical problems of urban society.

26-18 Social Progress—The historical development of the theory of progress, contemporary concepts of social progress, the agents of progress, and the phenomenon of regression are several of the subjects for study.

26-19 Sociological Theory—With emphasis upon modern authorities, this course surveys the chief systems of sociological thought and the personalities who have made outstanding contributions to the field. Such leading thinkers as Sumner, Ward, Gumpłowicz, Durkheim, and Pareto are studied. The relation of sociological theory to contemporary world movements is stressed.

26-20 American Social Thought—Beginning with such early social philosophers as Thomas Jefferson and Thomas Paine, this course deals with the significant contributions to the stream of our national culture. The sociological concepts, forces, and institutions—which have produced what is commonly designated as the American way of life—are analyzed and evaluated.

26-21 Sociology of Religion—Religious beliefs, practices, and institutions are examined and evaluated in relation to their effects upon society at large. The great religions of the world are compared in the light of their contributions to the well-being and progress of mankind. The social creeds of the several leading denominations in America are discussed with respect to their attitudes towards race, industry, war, and other social problems. The influences of organized religion upon politics and educational institutions are given attention.

26-22 *Principles of Social Work*—This course is designed to prepare the student for part-time or full-time participation, either on a voluntary or professional basis, in any of the major social service agencies. Methods and techniques are studied, and the practical problems are discussed. Several representatives from the various agencies will give occasional lectures. Field trips are offered.

26-24 *Social Control*—The methods by which social forces are controlled provide the fundamental material of the course. External and internal types of control of the social organism are discussed. The use of violence, the power of public opinion, and the application of certain principles of social psychology are examined.

26-61 *Seminar*—Assigned readings and reports on selected topics. May be elected with the consent of the department by qualified seniors majoring in sociology.

26-62 *Seminar*—A continuation of 26-61.

Theses

A thesis in the College of Liberal Arts is considered to be an essay involving the statement, analysis, and solution of some problem in a special field. Its purpose is to demonstrate a satisfactory degree of initiative and power of original thought and work on the part of the candidate. A mere resume of existing knowledge in some subject is not acceptable. This, it is true, must usually be made, but in addition thereto the student must show an ability to deal constructively with the data which have been collected and the power to draw significant and reliable conclusions from the investigations. The completed thesis will be examined for acceptance or rejection from the technical viewpoint by the major departments interested and then forwarded to the Secretary of the Faculty. Final approval of the thesis rests with the Dean. When it is accepted, the thesis becomes the property of the college and is not to be printed, published, nor in any other way made public except in such manner as the major department and the Dean shall jointly approve.

Frequently thesis subjects may be chosen on problems arising where the student is employed at co-operative work. Employers are usually glad to consult with the student in the selection of the subject and the subsequent development of the thesis.

When theses are conducted in this manner, it is understood that the employer is not expected by the University to assume any expense of the thesis nor to furnish any supplies or equipment to be used in the development of the thesis other than those which he may consider it advisable and desirable to place at the disposal of the students. The regulations governing the use of laboratories and buildings of the co-operating firms will vary in practically all cases and each student must naturally be governed definitely by the regulations existing at the plant where the thesis is to be conducted.

It is understood that the thesis work must not in any way interfere with the regular required co-operative work and must be done during hours distinctly outside of regular co-operative work hours unless special request is made by the co-operating firm for some other arrangement.

Theses conducted in conjunction with co-operating firms must be submitted in duplicate, one copy to be presented by the Dean to the co-operating employer.

Theses are not required of seniors in the College of Liberal Arts. To certain students who wish to do so, however, the privilege of writing a thesis may be granted by the Faculty Committee on Theses in accordance with the following regulations:

1. To be eligible to write a thesis a student must have attained a scholastic average of at least 2.0 or better through the middler year and the first half of the junior year.

2. Students who have met this minimum requirement may petition for the privilege of substituting a thesis for formal classroom work.

3. In this petition the student must state the subject which is to be investigated and give a brief statement of the purpose and scope of the proposed thesis.

4. Petitions for the privilege of writing theses must be submitted in writing to the head of the student's major department not later than the middle of the second term of the junior year.

Typewriting

Since some skill in typewriting is so valuable in many types of Co-operative work, an optional program in typewriting is provided. Students meet twice a week for class instruction and then spend at least two hours a week in supervised practice in the typewriting laboratory. Although no academic credit toward the degree is given for this work, students are given certificates of proficiency.

NORTHEASTERN UNIVERSITY

COLLEGE OF
BUSINESS
ADMINISTRATION

Admission Requirements and Courses of Study

1950-1951



(COEDUCATIONAL)

BOSTON 15, MASSACHUSETTS
JANUARY, 1950

THE COLLEGE OF BUSINESS ADMINISTRATION

Policy

THE COLLEGE OF BUSINESS ADMINISTRATION offers programs of professional education at the university level to meet the needs of the young men and women who hope to fill administrative positions in business. Intelligent management of our complex enterprises cannot be soundly undertaken without a full appreciation of the social, economic, and political environment in which business must operate, without a complete understanding of the basic principles of business, and without practical knowledge of the tools of business management.

The academic content of the different curricula in the College of Business Administration is, therefore, divided roughly as follows: one-eighth in English (writing and speaking), one-third in the social sciences, one-quarter in a special branch of business, and one-quarter in related business subjects. Since periods of probation and apprenticeship are inherent in the nature of positions at the administrative level, the Northeastern programs based upon the Co-operative Plan are especially significant.

Aims of the College

In keeping with current trends in collegiate business education, the educational policy of the college is directed toward the achievement of the following purposes:

First: To offer that type of education for business which will enable men and women to select most advisedly the field of business best suited to their aptitudes. The Co-operative Plan is particularly effective in this respect.

Second: To build for breadth of perspective in preference to overspecialization with its narrowing effects. To eliminate haphazard selection of courses, through concentration upon balanced, carefully coordinated curricula, in order to provide an adequate background for specialization and yet not overlook professional needs and requirements.

Third: To provide a thorough knowledge of fundamental economic laws and an understanding of their applications in business.

Fourth: To develop the habits of accurate thinking that are essential to sound judgment.

Fifth: To develop attitudes and ideals that are ethically sound and socially desirable.

Methods

In order that these aims may be realized as fully as possible, the College makes use of the problem and the case methods of instruction in addition to the lecture and recitation system. Students should learn to analyze every proposition, to challenge unsupported assertions, to think independently, and to support their thinking with logic and facts.

Hence, concrete problems and cases which executives have faced in accounting, marketing, organizing, and the like constitute a large proportion of classwork in the upper years.

Admission Requirements

Applicants for admission to the freshman class must qualify by graduation from an approved course of study in an accredited secondary school, including prescribed subjects listed below.

Applicants are not required to take entrance examinations in high school subjects, but all candidates for the freshman class are asked to come to Northeastern University to take scholastic aptitude tests.

In the event that the distance to Boston from an applicant's place of residence is too great, the Committee on Admissions is willing under certain conditions to make a decision on test results submitted by the College Entrance Examination Board.

Prescribed Subjects for Admission

College of Business Administration

Algebra	1 unit
Natural science	1 unit
Science, social studies, mathematics and/or foreign language	6 units
English (four years)	3 units
Electives	4 units
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Total	15 units

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

Other Requirements

These formal requirements are necessary and desirable in that they tend to provide all entering students with a common ground upon which the first year of the college curriculum can be based. But academic credits alone are not an adequate indication of a student's ability to profit by a college education. Consequently, the Department of Admissions takes into consideration, along with the formal requirements stated above, other factors regarding candidates for the freshman class. A student's

interests and aptitudes in so far as these can be determined, capacity for hard work, attitude toward classmates and teachers in high school, physical stamina, and most important of all, character, are considered. In this way the University seeks to select for its student body those who not only meet the academic admission requirements but who also give promise of acquitting themselves creditably in the rigorous program of training afforded by the Co-operative Plan and of being useful members of society.

Personal Interview

A personal interview is always preferred to correspondence, and parents are urged to accompany the applicant whenever this is possible. Effective guidance depends in large measure upon a complete knowledge of a student's background and problems. Parents invariably are able to contribute information that aids the admissions officer in arriving at a decision.

Applicants who come from a distance are advised to write in advance to see if it is possible to arrange for an interview and for the required scholastic aptitude tests on the same day. The examinations are scheduled only on Saturday mornings, at dates to be announced. Office hours are from 9:00 A.M. to 4:00 P.M. daily; Saturdays to 12:00 M. The Department of Admissions will interview applicants on Wednesday evenings but by appointment only.

Application for Admission

Each applicant for admission is required to fill out an application blank stating previous education, as well as the names of persons to whom reference may be made.

A fee of five dollars (\$5.00) is required when the application is filed. This fee is nonreturnable.

The last page of this catalog is in the form of an application blank. It should be filled out in ink and forwarded with the required five-dollar fee to the Director of Admissions, Northeastern University, Boston 15, Massachusetts.

Checks should be made out to Northeastern University.

Upon receipt of the application, properly filled out, the University secures the references and secondary school record. Applicants having satisfactory secondary school records are notified to report to the University to take special scholastic aptitude tests. As soon as possible after the Committee on Admissions has reviewed the results of these tests, a report of the status with respect to admission will be sent to each candidate.

Early filing of applications is recommended.

The University reserves the right to place any entering student upon an indefinite trial period.

Tuition Deposit

Applicants accepted for admission must upon request pay a non-returnable tuition deposit of twenty-five dollars (\$25) as evidence of their bona fide intentions to matriculate.

Registration

Eligibility for admission does not constitute registration. Freshmen will register at the University on Wednesday, September 6, 1950, and Wednesday, November 15, 1950. Students are not considered to have met the requirements for admission until they have successfully passed the required physical examination.

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it, and they are approved by the Co-operative Work Department in an interview scheduled in the late spring or summer previous to registration in September. Whenever a person enters with advanced standing and later proves to have inadequate preparation in any prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their initial inquiry.

Requirements for Graduation

Students may qualify for the degree of Bachelor of Science in Business Administration in one of the following options: Accounting, Industrial Relations, Marketing and Advertising, Finance and Insurance, and Business Management.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify with a degree of proficiency acceptable to the faculty. Students who undertake co-operative work assignments must also meet the requirements of the Department of Co-operative Work before they become eligible for their degrees.

Students transferring from another college or university are not eligible to receive the B.S. degree until they have completed at least one academic year at Northeastern immediately preceding their graduation.

Scholarship Requirements

Students who fail to show satisfactory standards of general efficiency in their professional fields may be required to demonstrate their qualifications for the degree by taking such additional work as the faculty may prescribe. Those who are clearly unable to meet the accepted standard of attainment may be required to withdraw from the University. The degree conferred not only represents the formal completion of the subjects in the selected course of study but also indicates professional competence in the designated field of business administration.

Graduation with Honor

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least three years before they may become eligible for honors at graduation.

Thesis Option

Theses are not required of candidates for the degree of Bachelor of Science in Business Administration. Students who show special aptitude for thesis work, however, may be permitted to substitute an appropriate thesis for equivalent work in class. Such permission must be obtained by the candidate from the Dean of the college.

The Programs of Study

First Year

A full year of thirty weeks is devoted to a survey of the economic, political, and social institutions that underlie the conduct of business.

The basic tool of business, the keeping of accounts, is introduced during the first year to provide a practical check upon the interest and capacity of each student in the College of Business Administration.

English is given an important place and other courses fill the personal needs of the student and prepare him for the more advanced work. Throughout the year each student has the friendly counsel and guidance of a faculty adviser whose aim is to help bridge the gap between high school and college.

Upperclass Years

Under the Northeastern five-year Co-operative Plan training on the job starts with the second year.

At the end of the second year, at the close of term 6, students formally elect their curricular options in accordance with their major fields of interest and natural aptitudes.

In each of terms 7, 10 and 13, students will elect certain nonprofessional courses. A student may, for instance, elect to take a series of courses in a language or to take advanced courses in economics, history, government, sociology, psychology, or to take particular courses in other fields of study. The list of elective subjects for each term will be somewhat limited by schedule conflicts with the prescribed program of study but as wide a selection as practicable will be offered.

During the last year all students attend a series of meetings designed to prepare them for entrance into the business world. Under expert guidance each student prepares a complete personnel record, studies himself and the opportunities that are open to him, and generally establishes himself for his "commencement."

The Professional Options

All students are required to take common courses which are deemed necessary for a well-rounded training. These are pursued jointly with the professional work which has been selected, with a view to meeting the changing and expanding needs of present-day business conduct, while at the same time meeting the vocational needs of the students by way of earning a living. A brief statement of the vocational opportunities in the fields of work represented by each of the professional options follows:

I. Accounting—Many successful careers are open to the professional accountants. Their services are demanded by business, commerce, and industry. Public and private enterprises seek adequately trained men and women. Better known among the wide variety of titles descriptive of their work are public and private accountant, cost accountant, resident and traveling auditor, credit manager, statistician, investigator, adjuster, and financial accountant.

II. Industrial Relations—The day is past when "anyone" can direct labor-management relations. A host of opportunities exist, therefore, in this newer field, the human side of conducting a business. Both unions and management offer a wide selection of positions in personnel, bargaining, wage administration, and public relations. The government, too, has many openings for men and women who have taken this program of studies.

III. Marketing and Advertising—Business and industry must sell their services and products to each other and to the general public. Successful selling means more than being a salesman. It demands knowledge of distribution channels, markets and buying habits, as well as sales resistance. It means also knowing how to buy in order to sell and then how to organize, promote, and carry out a sales campaign.

The following list is representative of the vast array of marketing and advertising occupations: sales manager, supervisor, analyst and correspondent, advertising manager, promotion manager, copy supervisor, space buyer, and publicity director; market, product and sales analyst, industrial salesman, sales personnel supervisor, field representative, missionary salesman, manufacturer's agent, merchandise manager, and retail store operator.

IV. Finance and Insurance—Financial institutions serving present-day business and industry are its life stream. Any list of these organizations which are indispensable in the conduct of business must include banks, insurance companies, investment houses, credit concerns, financial exchanges, business forecasting organizations, financial service institutions, mortgage companies, national and local real estate brokerage firms, and appraisers.

Specific courses offered in Northeastern University's College of Business Administration open the door to a host of careers in these institutions as well as the many governmental regulatory agencies controlling their operations.

V. *Business Management*—This curriculum might be called the basic program of the College of Business Administration. Graduates in Business Management find posts in small business, big business, and public service.

Here is the field of training for the person whose ambition is to start a business of his own.

Here is the field of training for the person who is thinking in terms of production control, planning, methods analysis, purchasing, traffic control, or other supervisory and executive work.

Here is the field of training for the person who is keenly aware of the possibilities in public administration. Increased use of city-management plans and increased number and prestige of civil service careers present a wide group of opportunities to graduates of this program.

Prelegal Curriculum

Effective September 1, 1938, by a ruling of the Supreme Judicial Court of Massachusetts, in order to be eligible for examination for admission to the bar, an applicant must have completed certain general educational requirements before beginning his legal education. Briefly, this general education must comprise graduation from a four-year high school and the completion of not less than half of the work accepted for the Bachelor's degree in a college approved by the Board of Bar Examiners.

Recognizing that business training furnishes an excellent background for legal training, the College of Business Administration offers a prelegal curriculum. This consists of taking an amount of work in the college equivalent to that required for admission to specific law schools in the Commonwealth, and requires residence in school for sixty-five weeks of instruction spread over the first two college years. Prelegal students are not required to take the Co-operative Plan.

Combined Program Business Administration and Law

The combined curriculum in the College of Business Administration and the School of Law enables students to reduce by one year the time ordinarily required for obtaining the B.S. in Business Administration and the LL.B. degrees. Students who have completed before entering the School of Law at least 175 Northeastern credits of academic work of which at least 120 must have been earned in the Northeastern University College of Business Administration, and who have fulfilled all other graduation requirements, will receive the B.S. degree in Business Administration upon the satisfactory completion of the full first year program in the Day Division of the School of Law. Students who enter the Evening Division of the School of Law will be eligible for the first degree upon satisfactory completion of the full equivalent of the first year of the day Law School program.

In both instances the first degree will be conferred at the next Commencement following determination of eligibility for the first degree.

Curriculum in Accounting (41)

FIRST YEAR

TERM 1					TERM 2					TERM 3						
Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
01 English	3	0	6	3	30-02 English	3	0	6	3	30-03 English	3	0	6	3		
01 Econ. Geog.	3	0	6	3	20-02 Econ. Geog.	3	0	6	3	20-03 Econ. Geog.	3	0	6	3		
01 Am. Govt.	3	0	6	3	22-02 Am. Govt.	3	0	6	3	22-03 Am. Govt.	3	0	6	3		
01 Prin. of Acct.	4	0	8	4	41-02 Prin. of Acct.	4	0	8	4	41-03 Prin. of Acct.	4	0	8	4		
11 Hist. Civil.	3	0	6	3	27-12 Hist. Civil.	3	0	6	3	27-13 Hist. Civil.	4	0	8	4		
10 Phys. Tr.	0	2	0	0	16-11 Phys. Tr.	0	2	0	0	16-12 Phys. Tr.	0	2	0	0		
	16	2	32	16		16	2	32	16		17	2	34	17		

SECOND YEAR

TERM 4*					TERM 5					TERM 6				
04 English Lit.	5	0	10	2½	43-21 Prin. of Mktg.	3	0	6	3	43-22 Prin. of Adv.	3	0	6	3
09 Int. to Stat.	3	6	9	3	44-21 Prin. of Bnkg.	3	0	6	3	44-22 Prin. of Ins.	3	0	6	3
Graphic Pres.														
14 Hist. Civil.	4	0	8	2	45-21 Ind. Mgt.	3	0	6	3	45-22 Ind. Mgt.	3	0	6	3
					41-23 Inter. Acct.	4	0	8	4	41-24 Inter. Acct.	4	0	8	4
					25-01 Int. to Psych.	4	0	8	4	25-02 Gen. Psych.	4	0	8	4
	12	6	27	7½		17	0	34	17		17	0	34	17

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
13 Econ. Prin.	10	0	20	5	20-14 Econ. Prob.	4	0	8	4	20-15 Econ. Prob.	4	0	8	4
Elective	5	0	10	2½	44-31 Bus. Finance	4	0	8	4	44-32 Bus. Finance	4	0	8	4
					41-35 Adv. Acct.	2	2	5	3	41-36 Adv. Acct.	2	2	5	3
					41-31 Cost Acct.	6	0	12	6	41-32 Cost Acct.	6	0	12	6
	15	0	30	7½		16	2	33	17		16	2	33	17

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
10s Probs. in Wr.	5	0	10	2½	20-20 Statistics	3	2	7	4	20-21 Statistics	3	2	7	4
Elective	5	0	10	2½						20-18a Am.Ec.Hist.	4	0	8	4
Elective	5	0	10	2½	46-41 Bus. Law I	4	0	8	4	46-42 Bus. Law II	4	0	8	4
					30-05 Public Spkg.	4	0	5	3	30-06 Public Spkg.	4	0	5	3
					41-40 Adv. Acct.	2	2	5	3					
					41-43 Auditing	2	2	5	3	41-44 Auditing	2	2	5	3
	15	0	30	7½		15	6	30	17		17	4	33	18

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
08s Bus. Comm.	5	0	10	2½	20-40 Bus. & Govt.	4	0	8	4	20-41 Bus. Pol.	4	0	8	4
Elective	5	0	10	2½	46-51 Bus. Law III	4	0	8	4	46-52 Bus. Law IV	4	0	8	4
Elective	5	0	10	2½	46-53 Inc. Tax Law	3	0	6	3	46-54 Inc. Tax Law	3	0	6	3
					41-55 C.P.A. Probs.	4	4	10	6	41-56 C.P.A. Probs.	4	4	10	6
	15	0	30	7½		15	4	32	17		15	4	32	17

Summer Term — 5 weeks.

Curriculum in Industrial Relations (42)

FIRST YEAR

TERM 1					TERM 2					TERM 3						
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.		Cl.	Lab.	Pr.	Cr.
30-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6
20-01	Econ. Geog.	3	0	6	3	20-02	Econ. Geog.	3	0	6	3	20-03	Econ. Geog.	3	0	6
22-01	Am. Govt.	3	0	6	3	22-02	Am. Govt.	3	0	6	3	22-03	Am. Govt.	3	0	6
41-01	Prin. of Acct.	4	0	8	4	41-02	Prin. of Acct.	4	0	8	4	41-03	Prin. of Acct.	4	0	8
27-11	Hist. Civil.	3	0	6	3	27-12	Hist. Civil.	3	0	6	3	27-13	Hist. Civil.	4	0	8
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys Tr.	0	2	0
		16	2	32	16			16	2	32	16			17	2	34

SECOND YEAR

TERM 4*						TERM 5						TERM 6					
30-04	English Lit.	5	0	10	2½	43-21	Prin. of Mktg.	3	0	6	3	43-22	Prin. of Adv.	3	0	6	3
20-09	Int. to Stat.	3	6	9	3	44-21	Prin. of Bnkg.	3	0	6	3	44-22	Prin. of Ins.	3	0	6	3
	Graphic Pres.																
27-14	Hist. Civil.	4	0	8	2	45-21	Ind. Mgt.	3	0	6	3	45-22	Ind. Mgt.	3	0	6	3
						41-21	Sur. of Ac. Pr.	4	0	8	4	41-22	Sur. of Ac. Pr.	4	0	8	4
						25-01	Int. to Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8	4
		12	6	27	7½			17	0	34	17			17	0	34	

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
20-13 Econ. Prin.	10	0	20	5	20-14 Econ. Prob.	4	0	8	4	20-15 Econ. Prob.	4	0	8	4
26-07s Sociology	5	0	10	2½	44-31 Bus. Finance	4	0	8	4	44-32 Bus. Finance	4	0	8	4
					30-05 Public Spkg.	4	0	5	3	30-06 Public Spkg.	4	0	5	3
					45-33 Mgt. Probs.	2	0	4	2	45-34 Mgt. Probs.	2	0	4	2
					25-35 Ind. Psych.	4	0	8	4	25-36 Ind. Psych.	4	0	8	4

FOURTH YEAR

TERM 10*					TERM 11					TERM 12							
41-33	Cost for Mgt.	10	0	20	5	20-20	Statistics	3	2	7	4	20-21	Statistics	3	2	7	4
	Elective	5	0	10	2½	20-18a	Am.Ec.Hist.	4	0	8	4	42-44	Wage Adm.	4	0	8	4
						46-41	Bus. Law I	4	0	8	4	46-42	Bus. Law II	4	0	8	4
						42-41	Pers'l Adm.	3	0	6	3	42-42	Pers'l Adm.	3	0	6	3
						30-10	Probs. in Wr.	3	0	6	3	30-08	Bus. Comm.	3	0	6	3
		15	0	30	7½			17	2	35	18			17	2	35	

FIFTH YEAR

TERM 13*					TERM 14					TERM 15						
30-07B	Conf. Lead.	8	0	7	2½	20-40	Bus.& Govt.	4	0	8	4	20-41	Bus. Pol.	4	0	8
41-42S	Bud. Proc.	5	0	10	2½	45-30	Prod. Proc.	4	0	8	4	42-58	Test. & Guid.	4	0	8
	Elective	5	0	10	2½	42-61	Sem. Col. Bg.	5	0	10	5	42-62	Sem. Col. Bg.	6	0	12
						46-55	Labor Law	4	0	8	4	42-52	Mot. & Time	2	2	5
		18	0	27	7½			17	0	34	17			16	2	33

*Summer Term — 5 weeks.

Curriculum in Marketing and Advertising (43)

ST YEAR

TERM 1					TERM 2					TERM 3						
Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
1 English	3	0	6	3	30-02 English	3	0	6	3	30-03 English	3	0	6	3	3	3
1 Econ. Geog.	3	0	6	3	20-02 Econ. Geog.	3	0	6	3	20-03 Econ. Geog.	3	0	6	3	3	3
1 Am. Govt.	3	0	6	3	22-02 Am. Govt.	3	0	6	3	22-03 Am. Govt.	3	0	6	3	3	3
1 Prin. of Acct.	4	0	8	4	41-02 Prin. of Acct.	4	0	8	4	41-03 Prin. of Acct.	4	0	8	4	4	4
1 Hist. Civil.	3	0	6	3	27-12 Hist. Civil.	3	0	6	3	27-13 Hist. Civil.	4	0	8	4	4	4
0 Phys. Tr.	0	2	0	0	16-11 Phys. Tr.	0	2	0	0	16-12 Phys. Tr.	0	2	0	0	0	0
	16	2	32	16		16	2	32	16		17	2	34	17		

OND YEAR

TERM 4*					TERM 5					TERM 6				
4 English Lit.	5	0	10	2½	43-21 Prin.of Mktg.	3	0	6	3	43-22 Prin. of Adv.	3	0	6	3
9 Int. to Stat.	3	6	9	3	44-21 Prin.of Bnkg.	3	0	6	3	44-22 Prin. of Ins.	3	0	6	3
Graphic Pres.														
4 Hist. Civil.	4	0	8	2	45-21 Ind. Mgt.	3	0	6	3	45-22 Ind. Mgt.	3	0	6	3
					41-21 Sur. Ac. Pr.	4	0	8	4	41-22 Sur. Ac. Pr.	4	0	8	4
					25-01 Int. to Psych.	4	0	8	4	25-02 Gen. Psych.	4	0	8	4
	12	6	27	7½		17	0	34	17		17	0	34	17

RD YEAR

TERM 7*					TERM 8					TERM 9				
3 Econ. Prin.	10	0	20	5	20-14 Econ. Probs.	4	0	8	4	20-15 Econ. Probs.	4	0	8	4
7s Sociology	5	0	10	2½										
					30-05 Public Spkg.	4	0	5	3	30-06 Public Spkg.	4	0	5	3
					43-30 Salesmans'p	4	0	8	4	43-32 Sales Mgt.	6	0	12	6
					43-31 Copy Wtg.	2	0	4	2					
					44-31 Bus. Finance	4	0	8	4	44-32 Bus. Finance	4	0	8	4
	15	0	30	7½		18	0	33	17		18	0	33	17

RTH YEAR

TERM 10*					TERM 11					TERM 12				
0s Prob.in Wr.	5	0	10	2½	20-20 Statistics	3	2	7	4	20-21 Statistics	3	2	7	4
Elective	5	0	10	2½	20-18a Am.Ec.Hist	4	0	8	4	43-40 Adv. Prod.	4	0	5	3
Elective	5	0	10	2½	46-41 Bus. Law I	4	0	8	4	46-42 Bus. Law II	4	0	8	4
					30-07B Conf. Lead.	3	0	3	2	43-44 For. Mktg.	3	0	6	3
					43-43 Mktg. Res.	4	0	8	4	43-46 Cr. & Coll.	3	0	6	3
	15	0	30	7½		18	2	34	18		17	2	32	17

TH YEAR

TERM 13*					TERM 14					TERM 15				
8s Bus. Comm.	5	0	10	2½	20-40 Bus. & Govt.	4	0	8	4	20-41 Bus. Pol.	4	0	8	4
Elective	5	0	10	2½	46-51 Bus. Law III	4	0	8	4	43-52 Store Mgt.	4	0	8	4
Elective	5	0	10	2½	43-51 Sales Mgt.	3	0	6	3	43-62 Sem. Mktg Ad.	6	0	12	6
					43-53 Prob. in Adv.	3	0	6	3	43-54 Prob. in Adv.	3	0	6	3
					26-13a Soc. Ethics	3	0	6	3					
	15	0	30	7½		17	0	34	17		17	0	34	17

Summer Term — 5 weeks.

Curriculum in Finance and Insurance (44)

FIRST YEAR

TERM 1					TERM 2					TERM 3						
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.		
30-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6
20-01	Econ. Geog.	3	0	6	3	20-02	Econ. Geog.	3	0	6	3	20-03	Econ. Geog.	3	0	6
22-01	Am. Govt.	3	0	6	3	22-02	Am. Govt.	3	0	6	3	22-03	Am. Govt.	3	0	6
41-01	Prin. of Acct.	4	0	8	4	41-02	Prin. of Acct.	4	0	8	4	41-03	Prin. of Acct.	4	0	8
27-11	Hist. Civil.	3	0	6	3	27-12	Hist. Civil.	3	0	6	3	27-13	Hist. Civil.	4	0	8
16-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0
<hr/>					<hr/>					<hr/>						
16					16					17						
2 32 16					2 32 16					2 32 16						

SECOND YEAR

TERM 4*					TERM 5					TERM 6						
30-04	English Lit.	5	0	10	2½	43-21	Prin. of Mktg.	3	0	6	3	43-22	Prin. of Adv.	3	0	6
20-09	Int. to Stat.	9	0	9	3	44-21	Prin. of Bnkg.	3	0	6	3	44-22	Prin. of Ins.	3	0	6
	Graphic Pres.															
27-14	Hist. Civil.	4	0	8	2	45-21	Ind. Mgt.	3	0	6	3	45-22	Ind. Mgt.	3	0	6
						41-21	Sur. Ac. Pr.	4	0	8	4	41-22	Sur. Ac. Pr.	4	0	8
						25-01	Int. to Psych.	4	0	8	4	25-02	Gen. Psych.	4	0	8

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
20-13 Prin. of Econ.	10	0	20	5	20-14 Econ. Probs.	4	0	8	4	20-15 Econ. Probs.	4	0	8	
26-07s Sociology	5	0	10	2½	44-31 Bus. Finance	4	0	8	4	44-32 Bus. Finance	4	0	8	
					44-33 Ins. Probs.	3	0	6	3	44-34 Ins. Probs.	3	0	6	
					30-05 Public Spkg.	4	0	5	3	30-06 Public Spkg.	4	0	5	
					41-30 Anal. Fin. St.	2	2	5	3	43-46 Cred. & Coll.	3	0	6	

FOURTH YEAR

TERM 10*					TERM 11					TERM 12						
30-10	Probs. in Wr.	5	0	10	2½	20-20	Statistics	3	2	7	4	20-21	Statistics	3	2	7
	Elective	5	0	10	2½	20-18a	Am.Ec.Hist.4	0	8	4		20-25a	Bus. Cycles	3	0	6
	Elective	5	0	10	2½	46-41	Bus. Law I	4	0	8	4	46-42	Bus. Law II	4	0	8
						44-41	Invest. I	3	0	6	3	44-42	Invest. II	3	0	6
						14-25a	Math.ofFin.	3	0	6	3	14-25b	Math.ofFin.	3	0	6
<hr/>					<hr/>					<hr/>						
15					17					16						
0 30					2 35 18					2 33						
7½																

FIFTH YEAR

TERM 13					TERM 14					TERM 15						
30-08	Bus. Comm.	5	0	10	2½	20-40	Bus.& Govt.	4	0	8	4	20-41	Bus. Pol.	4	0	8
30-07B	Conf. Lead.	8	0	7	2½	46-51	Bus. Law III	4	0	8	4	46-52	Bus. Law IV	4	0	8
	Elective	5	0	10	2½	44-53	Bank Mgr.	3	0	6	3	44-54	Invest. Bnkg.	3	0	6
						44-51	Trust Mgt.	3	0	6	3	44-52	Security Mkts.	3	0	6
						26-13a	Soc. Ethics	3	0	6	3	20-51	Public Fin.	3	0	6
<hr/>					<hr/>					<hr/>						
18					0	27	7½	17					0	34	17	
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*Summer Term — 5 weeks.

Curriculum in Business Management (45)

1ST YEAR

TERM 1					TERM 2					TERM 3						
Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
1 English	3	0	6	3	30-02 English	3	0	6	3	30-03 English	3	0	6	3		
1 Econ. Geog.	3	0	6	3	20-02 Econ. Geog.	3	0	6	3	20-03 Econ. Geog.	3	0	6	3		
1 Am. Govt.	3	0	6	3	22-02 Am. Govt.	3	0	6	3	22-03 Am. Govt.	3	0	6	3		
1 Prin.of Acct.	4	0	8	4	41-02 Prin.of Acct.	4	0	8	4	41-03 Prin. of Acct.	4	0	8	4		
1 Hist. Civil.	3	0	6	3	27-12 Hist. Civil.	3	0	6	3	27-13 Hist. Civil.	4	0	8	4		
0 Phys. Tr.	0	2	0	0	16-11 Phys. Tr.	0	2	0	0	16-12 Phys. Tr.	0	2	0	0		
	16	2	32	16		16	2	32	16		17	2	34	17		

2ND YEAR

TERM 4*					TERM 5					TERM 6				
4 English Lit.	5	0	10	2½	43-21 Prin. of Mktg.	3	0	6	3	43-22 Prin. of Adv.	3	0	6	3
9 Int. to Stat.	3	6	9	3	44-21 Prin. of Bnkg.	3	0	6	3	44-22 Prin. of Ins.	3	0	6	3
Graphic Pres.														
4 Hist. Civil.	4	0	8	2	45-21 Ind. Mgt.	3	0	6	3	45-22 Ind. Mgt.	3	0	6	3
					41-21 Sur. Ac. Pr.	4	0	8	4	41-22 Sur. Ac. Pr.	4	0	8	4
					25-01 Int. to Psych.	4	0	8	4	25-02 Gen. Psych.	4	0	8	4
	12	6	27	7½		17	0	34	17		17	0	34	17

3RD YEAR

TERM 7*					TERM 8					TERM 9				
3 Econ. Prin.	10	0	20	5	20-14 Econ. Probs.	4	0	8	4	20-15 Econ. Probs.	4	0	8	4
Elective	5	0	10	2½	44-31 Bus. Finance	4	0	8	4	44-32 Bus. Finance	4	0	8	4
					30-05 Public Spkg.	4	0	5	3	30-06 Public Spkg.	4	0	5	3
					45-30 Prod. Proc.	4	0	8	4	45-32 Prod. Mgt.	4	0	8	4
					45-33 Mgt. Probs.	2	0	4	2	45-34 Mgt. Probs.	2	0	4	2
	15	0	30	7½		18	0	33	17		18	0	33	17

4TH YEAR

TERM 10*					TERM 11					TERM 12					
3	CostforMgt.	10	0	20	5	20-20 Statistics	3	2	7	4	20-21 Statistics	3	2	7	4
	Elective	5	0	10	2½	20-18a Am.Ec.Hist	4	0	8	4	43-46 Cred. & Coll.	3	0	6	3
						46-41 Bus. Law I	4	0	8	4	46-42 Bus. Law II	4	0	8	4
						42-41 Pers'l Adm.	3	0	6	3	42-42 Pers'l Adm.	3	0	6	3
						30-10 Probs. in Wr.	3	0	6	3	30-08 Bus. Comm.	3	0	6	3

5TH YEAR

TERM 13*					TERM 14					TERM 15				
2s Budget Proc.	5	0	10	2½	20-40 Bus. & Govt.	4	0	8	4	20-41 Bus. Pol.	4	0	8	4
7B Conf. Lead.	8	0	7	2½	46-51 Bus. Law III	4	0	8	4	46-52 Bus. Law IV	4	0	8	4
Elective	5	0	10	2½	43-43 Mktg. Res.	4	0	8	4	43-52 Store Mgt.	4	0	8	4
					45-52 Mgt. of Sales	2	0	4	2					
					45-53 Pur. & Proc.	3	0	6	3	45-54 Traffic Mgt.	2	0	4	2
										42-52 Mot. & Time	2	2	5	3
	18	0	27	7½		17	0	34	17		16	2	33	17

Summer Term — 5 weeks.

Synopses of Courses of Instruction

On the pages which follow are given the synopses of courses offered in the several curricula of the College of Business Administration. Curricula of the three colleges comprise 130 weeks of classroom instruction, namely, three ten-week periods in the freshman year and 100 weeks of upperclass work. On the Co-operative Plan, the upperclass courses are evenly distributed over four years so that each division of co-operative students has 25 weeks of college work, 26 weeks of co-operative work, and one week of vacation annually.

A complete list of the courses of instruction offered in each of the Day Colleges is included in a special section of the catalog beginning on page 196. This section lists the prerequisite and preparation requirements, class and laboratory hours per week, the number of hours normally required for study preparation hours, and the number of credits which have been assigned to each course.

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

Accounting

41-01 Principles of Accounting—This course presents the fundamental principles of accounting theory and practice in a manner designed to meet the needs of students who intend to specialize in accounting as well as those who require a knowledge of accounting as a preparation for the study of industrial relations, banking and finance, production management, and marketing. Beginning with a consideration of the need for and the purpose served by accounting, a study of the balance sheet and operating statement is presented so that the ultimate goal and purpose of accounting is understood before the mechanical methods of recording business transactions are presented. The basic arithmetic operations will be reviewed and proficiency established in the handling of numbers.

41-02 Principles of Accounting—The course takes up specific balance sheet accounts; the law of debit and credit; the theory of nominal accounts; construction and interpretation of accounts; the recording process; the trial balance; construction of financial statements; the need for adjustments at the end of the period; depreciation; deferred and accrued items.

41-03 Principles of Accounting—This course continues the work of the first semester with increased emphasis placed on accounting and interpretation of accounts. The main topics covered are closing of books, starting the new period, comparative statements, control accounts, and the operation of petty cash systems.

41-21 Survey of Accounting Problems—This course opens with a short review of first year general principles and then develops the problems of advanced working sheet and financial statement preparation.

41-22—This course is a continuation of the above. Problems of income determination and the valuation of assets and liabilities are considered. Comparative statements, the statement of application of funds, and analysis of financial statements are other topics covered.

41-23 Intermediate Accounting—This course is a continuation of the fundamental principles of accounting. Greater emphasis is placed, however, on the accounting aspect of management. Special books, departmental accounts and statements, and accounting for manufacturing are specifically introduced. One of the main features of this course is the introduction of the analytical aspect of accounting.

41-24 Intermediate Accounting—The approach of 41-23 is continued with greater stress on the accounting rather than bookkeeping aspects. Continuity is aimed at throughout. Accounting for business organizations occupies the major part of the course. Formation and operation of partnerships and corporations are thoroughly covered. Special emphasis is placed on the valuation of partnership and corporation accounts. Problems dealing with branch accounting, installment sales, and bonds will also be studied in this course.

41-30 Financial Statements—The purpose of this course is to develop sound principles for an analysis and interpretation of the financial statements of a business enterprise. Such topics as the part played by financial statements in modern business, the construction of statements, analysis and interpretation of statements are considered. Financial statements peculiar to public utilities, railroads, mining, and moneyed corporations are covered.

41-31 Cost Accounting—The structure of factory costs from the executive's viewpoint is studied in this course. The subject is approached chiefly from the management point of view. Problems are presented in a summarized form in order to stress the fundamental aspects of costs. Managerial control through the use of accounts is emphasized at the beginning of the course. Some of the specific topics covered are accumulation and distribution of cost data, process cost, job cost, historical cost, estimated cost, standard cost, and spoilage cost.

41-32 Cost Accounting—This course is designed to develop in the student the managerial ability to control production, operating, and distribution costs through the use of cost accounting and the budget. Methods of costing and controlling materials, labor, and expenses are considered in detail. Cost variations are analyzed. Joint cost and by-product cost are introduced.

41-33 Cost for Management—This course covers the topics of unit costs, process costs, and specific order cost accounting. Control of distribution costs, accounting for standard costs, and budgets as a basis for cost control are also treated.

41-35 Advanced Accounting—The subjects covered in this course include partnerships, consignments, installment sales, insurance, correction of statements and books, the statement of affairs, receivership accounting, and home office and branch accounting.

41-36—This course is a continuation of 41-35. Parent and subsidiary accounting, foreign exchange, estates and trusts, public accounts, and stock brokerage are the topics to be considered. The course recognizes the developments in the field of accounting and the impact of legislation, in recent years, on accounting.

41-40 This course is a continuation of 41-35 and 41-36 and completes the sequential accounting that is the groundwork for advanced accounting problems.

41-42s Budget Procedure —The purpose of this course is to give consideration to the basic principles and procedures to be applied in preparing budgets. Among the various types of budgets developed are the sales, production, purchase, materials, labor, and expense.

41-43 Auditing—The course contemplates the application of accounting knowledge to the analysis and interpretation of accounting records. Case material is used to outline the type of procedure best adapted to an intelligent examination of accounting records, and the compilation of reports on which the business manager can base plans for future operations. Specifically, balance sheet audits, detailed audits, and special investigations for credit and other purposes receive attention.

41-44 Auditing—This is a continuation of 41-43.

41-55 C.P.A. Problems—The purpose of this course is to provide for the application of the knowledge of accounting principles and practice gained in the preceding courses to the analysis and solution of complex problems involving a recognition of the economic, legal, and social aspects of various forms of business organization. The course content consists chiefly of problems given in C.P.A. examinations. All phases of partnership, corporation, bond, depletion, cost accounting, consolidation, municipal accounting, bank accounting, adjustments of complex statements and reports, actuarial problems, and institutional accounting will be covered.

41-56 C.P.A. Problems—This is a continuation of 41-55.

Business Law

46-41 Business Law I—Contracts—This course covers the law of contracts as it affects the businessman. Under the law of contracts such subjects are considered as agreements, competent parties, consideration legality, assignment, discharge of contracts, enforcement of contracts, and damages for breach.

46-42 Business Law II—Negotiable Instruments—The widespread use of credit instruments in commercial transactions demands a knowledge of the law of bills and notes. After a discussion of the various types of instruments, detailed analysis will be made of requirements for negotiability, negotiation by endorsements of various kinds, the rights of holders in due course, the rights and liabilities of other parties, the requisites for charging other parties, and methods of discharge.

46-51 Business Law III—Personal Property and Sales—After an analysis of the law of personal property, emphasis will be placed upon the law of sales with detailed consideration for passing of title to goods, conditions and warranties, the Statute of Frauds, and rights and remedies of buyers and sellers.

46-52 Business Law IV—Agency—This course will treat in detail the law of agency with careful attention to agency relationships, rights and duties of the principal and the agent, rights of third parties, and termination of agency.

46-53 Income Tax Law—This course is designed to give the student practice in the reading and application of specific laws as they relate to the conduct of a business. It makes use of the knowledge of Accounting and Business Law already obtained and introduces the student to the detailed requirements of tax forms.

46-54 Income Tax Law—This is a continuation of 46-53.

46-55 Labor Law—This is a study of the creation, administration, and adjudication of the laws in respect to the broad field of industrial relations.

Business Management

45-21 Industrial Management—The course in industrial management places emphasis on the administrative and profit-making phases of factory and plant operation. A textbook is used to present elementary principles and problem material which are supplemented by lectures.

The first part of the course presents a brief historical background of U.S. industry; this is followed by a treatment of the location of the plant; plant services and material handling; plant design, structure, and layout; standardization, simplification, and specialization.

45-22 Industrial Management—This course is a continuation of Industrial Management 45-21. It deals with the control of plant operations. Each department of a modern industrial concern is considered, emphasis being placed on the organization and management problems confronted and how they may be handled, with the intention that the student shall become familiar with the activities and general working of each department and the relationship which the departments hold to one another.

other and to the business as a whole. In detail are considered budgeting, standards of performance (time and motion study, wage systems), organization, routing, scheduling, dispatching, inventory control, quality control, and visual controls such as the organization chart, planning board, and departmental report.

45-30 Production Processes—This is a course in the techniques, processes, and machines used in the production of manufactured articles. The subject matter is presented in lectures supplemented by slides, exhibits, and demonstrations.

45-32 Production Management—This course considers the problem of planning for and administering the productive departments of an enterprise. Methods of accelerating production to get the maximum from men, materials, and equipment receive major emphasis.

45-33 Management Problems—This course will analyze timely, significant problems that confront general management. The principles of industrial management previously studied are given practical application through lectures, discussions, and case studies.

45-34 Management Problems—This is a continuation of 45-33.

45-52 Management of Sales—This course will consider the organization of the Sales Department. Specific attention will be devoted to sales planning, advertising and promotion, selling and servicing.

45-53 Purchasing and Procurement—This is a study of the organization, functions, and duties of the purchasing department and its relations with other departments. Topics covered include specifications, sources of supply, types of procurement and governmental regulations, inventory controls, tests, and inspections.

45-54 Traffic Management—The organization and functions of the traffic department comprise the point of departure for this course. Major attention is paid to external problems of agency, packing, shipping, routing, rates, and governmental regulations.

45-61 Seminar in Business Management—Prepared management problem cases will comprise the core of this course. Each student will also prepare and present to the group an original case on a specific management problem.

45-62 — This is a continuation of 45-61.

Economics

20-01 Economic Geography—In order to provide an adequate background for the study of economics and to develop a better understanding of the world in which we do business, the course, *Economic Geography*, is divided into three parts. The first part is primarily concerned with fundamental geographic and geologic principles and facts.

20-02 Economic Geography—This is the second part of Economic Geography and emphasizes the socio-economic principles that underlie the development of resources in the different countries and climates of the world.

20-03 Economic Geography— This is the third part of Economic Geography and analyzes the politico-economic aspects of resource distribution and development in the form of trade and world relationships.

20-09 Introduction to Statistics — Graphical Presentation—A course which presents the fundamentals of the graphic language as it is employed in business and industrial relationships and intended to facilitate a better understanding between the fabrication and marketing phases of industrial products. The course includes a study of drawing equipment and its use, lettering, geometric constructions, multiplaner orthographic projection, freehand and technical sketching, pictorial representation, and elements of dimensioning, with a study and interpretation of drawings from the various industrial fields. (This course is listed by the Drawing Department as 12-05.)

20-13 Economic Principles—A thorough grounding in the fundamental principles and laws of economics is the aim of this basic course. The main topics include the nature and organization of production, the nature and importance of wants, the relation of money and prices, the process of exchange, the nature of international trade, the determination of price under conditions of competition and monopoly, the distribution of wealth and income in the form of wages, economic rent, interest, and profits.

20-14 Economic Problems—In this course the application of economic principles to some of the major economic problems of modern society is emphasized. The problems studied include consumption, international economic relationships, labor problems such as wages, unemployment, social security, and collective bargaining and the business cycle.

20-15 Economic Problems—A continuation of 20-14 Economic Problems. Among the problems considered are the following: price stabilization, the agricultural problem, the relation of government to business including the control of monopolies and public utilities, public finance, and proposals for the remodeling and improving of the economic system.

20-18a American Economic History—The economic development of the United States is traced from the colonial period to the present with special emphasis upon the period since the Civil War. Stress is laid upon the importance of economic factors and changes in our history in the description of the development of manufacturing, agriculture, domestic and foreign commerce, finance and banking, transportation and labor organizations. Consideration is given to European developments which have been closely related to those of the United States.

20-20 Statistics in Business—This course is intended to give the student an understanding of statistical principles and methods and their practical

application. A study is made of the nature, sources, collection, and organization of business facts; the presentation of such facts in tabular or graphic form, the various averages, measures of dispersion, and the construction and use of index numbers. Laboratory periods provide an opportunity for each student to demonstrate his ability to apply the principles studied.

20-21 Statistics in Business—The major portion of this continuation of 20-20 Statistics in Business concerns the analysis of time series and includes the methods of obtaining trends, seasonal indexes, and the measurement of cyclical variation. The application of correlation analyses is given extended attention.

20-25a Business Cycles—After a study of the conditions which underlie fluctuations in prices, volume of trade, physical production, and employment, attention is centered upon possibilities of forecasting and control.

20-40 Business and Government—The object of this course is to develop a thorough understanding of the relationships between government (local, state, national) and business. The attitudes of our government towards business since 1885 as evidenced by legislative, judicial, executive, and administrative action will be analyzed in detail.

20-41 Business Policy—This course is set up as a seminar for B.A. Seniors in which the members of the class will examine the problems that the business executives face daily in their relations with government, labor, the market, and the community. The ethical features of business policy formation will be stressed along with the social implications. An attempt will be made to determine the criteria by which fair business practices can be distinguished from unfair.

20-51 Public Finance—This course will develop the principles, practices, and problems arising from taxation and expenditure by Federal, state, and local governments.

English

30-01 English I—A review of basic sentence structure and the grammatical functions of clauses and phrases, followed by a study of effective sentence writing, paragraph development, and reading techniques. Theme assignments are planned to develop practical skill in each of the phases studied.

30-02 English I—A study of the structure and organization of written compositions: outlining, development of compositions by phases, and the analysis of expository writings. Experimental work in each phase is carried out by means of theme assignments and readings.

30-03 English I—A study of the problems peculiar to each of the four main types of discourse: exposition, description, narrative, and argument. Theme work includes, in addition to these basic types, some assignments in the framing of reports and the writing of business letters.

30-04 Introduction to Literature—A study of the aims and techniques of various common types of literature: the play, the short story, lyrical and narrative poetry, and the literary essay. Instructional methods include assigned reading and the writing of short critical reports.

30-05 Public Speaking—The fundamentals of good speech with emphasis on the conversational approach and a maximum of actual speech experience. The course aims to help the student meet the everyday demands of modern business, professional, and social life for clear, concise, and pleasing oral expression.

30-06 Public Speaking—A continuation of 30-05 with particular attention to speech organization, audience analysis, and the problems of impromptu speaking.

30-07B Conference Leadership—A course designed to study, observe, and practice the basic principles, procedures, and skills involved in planning, managing, and leading conferences. The class is organized as a business conference. Theory is subordinated to participation in the important conference types involved in modern business.

30-08 Business Communication—A survey of the basic techniques and forms of expression and communication in business. The principles and methods of oral communication are studied, with emphasis on the oral report, the discussion, the conference, and types of informal speech. By the use of cases, problems, and class exercises, the student is given practice in the forms of business communication.

30-10 Problems in Writing—A course in the clear, accurate, and effective presentation of factual data, opinions, policies, and judgments. Emphasis is laid on sound organization, completeness of data, and pointed expression.

Government

22-01 American Government—The study of our National Government with respect to its organization, functions, and constitutional powers and limitations.

22-02 American Government—A continuation of 22-01. Particular attention is paid to the legislative, administrative, and judicial machinery under the party system of government. The problems of bureaucracy are analyzed.

22-03 American Government—A study of the relationships of our federal, state, and municipal governments. Consideration is given to the various types of state and municipal governments with respect to the state and local agencies for carrying out the executive, legislative, and judicial functions of government in a democratic country.

Fine Arts

27-11 *History of Civilization*—Beginning with a survey of the art and religion of primitive peoples, this course includes studies of ancient Egypt, the Sumerian City Kingdoms, the Assyrian Empire, the Late Babylonian Period, Phoenician and Hebrew contributions, Cretan civilization, and Early Greece. Particular emphasis is placed upon the cultural contributions of these civilizations.

27-12 *History of Civilization*—This course includes a comparative analysis of Persian and Greek cultures, the growth and development of the Greek states, Greek art, architecture, science, and philosophies, the Hellenistic World, the rise of ancient Rome, and the growth and cultural contributions of the Roman Empire.

27-13 *History of Civilization*—This course includes a study of the rise of Christianity, organization and development of the Early Christian church, Early Christian and Byzantine art and architecture, the Feudal Age, Medieval arts and sciences, the Crusades, and Romanesque and Gothic architecture.

27-14 *History of Civilization*—Beginning with a summary of Eastern contributions to Western culture, this course includes a survey of Germany, Italy, England, France, and Spain at the close of the Middle Ages, the Italian Renaissance period, and the age of exploration and discovery.

Finance and Insurance

44-21 *Principles of Banking*—In this course the organization and administration of American banks is described in detail. All banking functions will be examined, but special emphasis will be laid upon the supplying of fixed and operating capital. The ABC of the Federal Reserve System will form an important part of the course along with the banking operations and agencies of our government.

44-22 *Principles of Insurance*—The purpose of the course is to provide a comprehensive knowledge of insurance principles and coverage such as will provide a broad foundation for the student who plans to enter the business of insurance or enable the man or woman in business to plan a satisfactory program for personal needs or business responsibilities. Content: the basic principles of insurance, solving the economic problem of risk, types of insurance contracts, legal interpretation of the insurance contract, types of insurance companies, the needs of the buyer of insurance, co-operative organizations in the field of insurance.

44-31 *Business Finance*—The fundamental principles of finance are approached in this course from the point of view of the businessman. A study is made of the two basic ways of financing, namely, equity and

borrowed funds, and their use in original and expansion financing. In addition, consideration is given to working capital requirements and the distinctions between short-term and long-term financing. This course, also, deals with the application of the principles of finance to such problems as surplus, dividend and reserve policies, the relation of the corporation to banks and the investing public, and the problems of both trade and economic risk.

44-32 Business Finance—The corporation, rather than business in general, is here considered. An analysis is made of the changing concepts in the corporation, such as separation of ownership and management, and the roles played by private initiative and private property. Through use of actual examples, a study is made of financial policies affecting sales, prices, markets, and control. The course includes an analysis of such combinations as trusts, holding companies, consolidations, and pools from both the public and financial points of view. Analysis is also made of aspects of reorganization problems in the light of present legislation. The course concludes with an analysis of government and state agencies now supplementing private sources of business funds.

44-33 Insurance Problems—Takes up in detail the various aspects of insurance covered in the survey course 44-22. Problems are analyzed dealing with policy contracts, rate making, investments of insurance companies, insurance law and government regulation, selling and service to policyholders.

44-34 Insurance Problems—This is a continuation of 44-33.

44-41 Investments—This course consists of a review of the principles of investment, a study of investment policies, and the mechanics and mathematics of investments. It includes a basic study of the advantages and disadvantages of stocks and bonds as media of investment from present and historical points of view.

44-42 Investments—A practical study is made of the various fields of investment such as industrials, rails, banks, real estate, government, and foreign investments. Emphasis is placed on security analysis as it pertains to the individual issues. The course not only concerns itself with an intensive study of particular companies and issues, but also includes an analysis of the various current methods of market analysis.

44-51 Trust Management—This course deals with the creation of personal and corporate trusts, functions of the trust officer, legal rights and duties of the parties, problems of Life man and Remainderman, government supervision, and investment problems.

44-52 Security Markets—This is a study of our security markets, how securities are bought and sold, the future market, the brokerage house, government regulation, and the problems of pricing.

44-53 Bank Management—The operations of a commercial bank are analyzed in detail, considering all aspects of the problems encountered in earning profits and in the external relationships with the banking system and the money market.

44-54 Investment Banking—The organization, functions, and operations of the investment house are carefully studied. Consideration is given the calculation of bid prices, forming of syndicates, distribution of securities, and government regulations.

Industrial Relations

42-41 Personnel Administration—A consideration of what modern industry is doing in making an application of science to the obtaining and retaining of an effective and co-operative working force. The student studies thoroughly personnel administration systems now in use, including the preparation and use of many forms among which are the occupational description, application, and interview blanks, promotion charts, wage scale, personnel control charts, etc. The day-to-day work of the employment office will be covered in detail.

42-42 Personnel Administration—This course brings to the attention of the student an understanding of the related, yet varied, problems with which the modern personnel department is confronted. These include problems of guidance, job evaluation, adjustment of rates, employee rating systems, promotion, layoff, restriction of output, and employee security and welfare policies. The effect of governmental regulations upon the work of the personnel department will be examined.

42-44 Wage Administration—The course will develop the following topics: Economic and Social Function of Wages, Administration of Wages by Industry, Wages under Collective Bargaining, Fringe Issues and Legislative Supplements, Wage Dispute Determination, and Wage Security.

42-52 Motion and Time Study—This course comprises a detailed study of time and motion study work, a complete study and actual practice in micromotion which is the use of motion pictures in the motion study work, a preparation of simo-charts (the use of colored charts and symbols called Therbligs which show all the elements in an operation cycle), and the making of process charts which is the use of specifically designed symbols, or industrial shorthand, to record motion analysis.

42-58 Testing and Guidance—This is a study of the creation and administration of industrial tests. The purpose is to provide a background for organizing a battery of tests and providing practice in the use of these tests.

42-61 Seminar in Collective Bargaining—For advanced study of the actual problems faced by industrial relations departments, with special emphasis upon the relationship between government and labor-management relations. Students will engage in research in order to understand the problems better and to develop familiarity with research methods.

42-62 Seminar in Collective Bargaining—This is a continuation of 42-61.

Marketing and Advertising

43-21 Principles of Marketing—This course is designed to acquaint the student with the principles underlying the distribution of merchandise. Textbook assignments and lectures introduce a knowledge of the place of marketing in our modern economic order; the basic structure of markets; the main functions of marketing; the general classification of commodities into major types; the activities of the several types of middlemen; the work of the commodity exchanges and co-operative marketing associations; and the development of chain stores, mail order houses, and department stores.

43-22 Principles of Advertising—The purpose of this course is to acquaint the student with the fundamental principles and facts which must be known by the men and women who are planning to select advertising as a career. The economic background of the subject and its development is presented, together with a survey of the methods for planning and preparing advertisements actually followed in advertising offices. Consideration is given to human instincts, buying habits, argumentative and suggestive appeals, color, headlines, layout, illustrations, and trademarks.

43-30 Salesmanship—The objective of this course is twofold: (1) To provide the student who is interested in a career in marketing and advertising, but not necessarily in personal selling, with a working and essential knowledge of the role of the salesman in the modern marketing process and the use that the effective salesman makes of modern marketing and advertising aids; (2) for those students interested in entering the field of personal selling as a career, a greater knowledge of modern selling techniques, including a thorough appreciation and understanding of the relation that exists between personal selling and the many marketing aids and techniques contained in a fully developed sales program.

43-31 Copywriting—The aim of this course is to develop skill in the analysis and preparation of effective advertising copy. Consideration is given to the relation of copy and headline to layout, the preparation of headlines and slogans and the principles of copy construction. Emphasis is placed upon the variety in types of copy required for different purposes and for the many different kinds of advertising media.

43-32 Sales Management—The study of actual case materials forms the basis of this course. In each case the facts are analyzed and solutions

proposed. The major problems of sales management cover the entire range of the marketing operation: What to sell? To whom shall products be sold? By what means or methods and at what prices and terms? The answering of these questions involves consideration of merchandising policies and organization, marketing channels, market research and sales analysis, pricing and credit policies, sales methods, sales campaigns, management of the sales force, and the planning and control of sales operations.

43-40 Advertising Production—The purpose of this basic course is to develop familiarity with the mechanical problems and processes in advertising. Elements of the course are: Visualizing the advertising idea; preparing the layout, including lettering and rough sketching; selecting the illustration; the use of color; photo-engraving and other illustrative processes; selection of type; determination of space requirements; printing and paper; and the working out of advertising production schedules. Included in the course will be production of all forms of printed advertising—publication, letters, folders, booklets.

43-43 Marketing Research—The scope and uses of market research and analysis, together with their basis in scientific method, are considered at some length to reveal specific practical applications of this modern marketing tool to business needs. Quantitative and qualitative sales analysis, market trends, advertising research, product analysis, territory and sales quota determination are considered fully and related to basic methods of measuring the effectiveness of the marketing-advertising operation.

43-44 Foreign Marketing—The purpose of this course is to give the student of marketing a knowledge of the problems, policies, and techniques essential to effective sales in overseas markets. Throughout the course emphasis is placed upon the differences in the nature of the problems encountered and the practices followed in this highly specialized field.

43-46 Credits and Collections—This course is designed to acquaint the student with modern methods of credit investigation, determination, and collections. Consideration will be given to credit instruments, mercantile credit practices and policies, mercantile and special agencies, problems and policies in retail credit, and legal right in collecting.

43-51 Sales Management—This course, a continuation of 43-32, is designed to round out the student's knowledge of Sales Management. Emphasis will be placed upon individual analysis of the marketing problems encountered by firms and industries that fall within the student's own particular area of interest, with additional consideration given in assigned readings and class discussions to the small business firm, industrial marketing, and consumer co-operatives.

43-52 Store Management—The purpose of this course is to study the principles of successful retailing and to acquaint the student with the more modern methods of operating a retail organization. The course

opens with a review and a more detailed discussion of markups, mark-downs, and markons. Consideration is then given to the operating statement as it applies to the retailer, the buying function, pricing of merchandise and the development of price lines, the control of inventory, stock turnover, the selection and management of retail sales personnel, and budgeting. Throughout the course merchandise planning is discussed and illustrated.

43-53 Problems in Advertising—Using actual case materials, this course analyzes and suggests solutions to a wide variety of advertising problems in typical industries and firms. Careful attention is given to the analysis and solution of a wide variety of advertising problems as they arise in use of the various advertising media and illustrate significant differences in consumers' buying habits and motives. The case method is used throughout the course.

43-54 Problems in Advertising—Conclusion of work carried on in 43-53 on the basis of individual research.

43-62 Seminar in Marketing and Advertising—This seminar course, taken in the last semester of the senior year, is intended to give students majoring in the field an opportunity to pursue further those specific aspects of marketing and advertising which are of particular interest to the student and in which he feels the need for additional information and training. Individual research and reports are the basis of the semi-weekly meetings of the seminar.

Mathematics

14-25a Mathematics of Finance—This course starts with the algebra and logarithms necessary for the understanding and use of the formulas developed in business mathematics. Then the subjects covered are interest, discount, annuities, sinking funds, depreciation, amortization, valuation of bonds, the use of graphs, the interpretation of statistical data, and insurance.

14-25b Mathematics of Finance—This is a continuation of 14-25a.

Physical Education

16-10-11-12 Physical Training—All first-year men students are required to take physical training. Health, strength, and vitality do not come by chance, but by constant attention to those factors involved in their development. It is very essential for the student to acquire good habits of life.

The work in the course includes a formal calisthenic program, special exercise classes for the correction of postural defects, participation in the regular athletic program, including baseball, basketball, hockey, track, and many types of informal games. All members of the class are also required to learn to swim.

Students wishing to be excused from physical training, because of physical defects, are required to present a petition to the faculty supported by a physician's certificate.

Psychology

25-01 Introductory Psychology—An elementary study of the structure, functions, and laws of mental life. The course considers the special relation of psychology to the social sciences; the scientific approach to a study of mental processes; the dynamics of animal and human behavior; the relationship between the individual's environment, his response mechanisms, and his personality; the biological and social sources of drives, desires, wishes, and incentives and their relation to interest, effort, adjustment, and maladjustment.

25-02 General Psychology—The course makes a systematic study of the psychological mechanisms underlying human behavior and it presents the more important theories of thought and action. It deals with the neurophysiological and psychological mechanisms involved in learning, memory, thought, imagination, motivation, emotion, sensation, and perception; the nature and extent of individual differences; aptitudes and aptitude testing. It emphasizes the practical application of psychological principles to mental and social adjustment. It presents the main problems in psychology and gives the points of view of the different schools of thought.

25-35 Industrial Psychology—A study of the principles and techniques of psychology in their relation to the problems which affect industrial efficiency. The course includes such topics as training and transfer, fatigue, monotony, motivation, accident prevention, conditions and methods of work, vocational fitness, adjustment, and the techniques of human control.

Special consideration is given to the motives controlling owner and manager of industry and that of the employees; to the conflicts of desire which result; to the emotional appeals which are used to resolve these conflicts; and to the unconscious impulses which are rationalized in idealistic and philosophical formulations.

25-36 Industrial Psychology—A continuation of 25-23.

Sociology

26-07s Sociology—This is a brief course in the principles of sociology with special attention to the origins, forms, and forces of human associations.

26-13a Social Ethics—To clarify the meaning of morality in social relationships is the aim of this study. Right and wrong conduct is analyzed in the light of the highest values for human society. Moral laws are discussed, and the various systems of ethics are evaluated.

Business Administration Theses

A thesis in the College of Business Administration is considered to be an essay involving the statement, analysis, and solution of some problem in a special field of business administration. Its purpose is to demonstrate a satisfactory degree of initiative and power of original thought and work on the part of the candidate. A mere resume of existing knowledge in some subject is not acceptable. This, it is true, must usually be made, but in addition thereto the student must show his ability to deal constructively with the data he has collected and his power to draw significant and reliable conclusions from his investigations. The completed thesis will be examined for acceptance or rejection from the technical viewpoint by the departments interested and then forwarded to the Secretary of the Faculty. Final approval of the thesis rests with the Dean. When it is accepted, the thesis becomes the property of the school and it is not to be printed, published, nor in any other way made public except in such manner as the department and the Dean shall jointly approve.

Theses are not required of seniors in the College of Business Administration. To certain students who wish to do so, however, the privilege of writing a thesis may be granted by the Dean in accordance with the following regulations:

1. To be eligible to write a thesis a student must have attained a scholastic average of at least 2.0 or better during the middler year and the first half of the junior year.

2. Students who have met this minimum requirement may petition the Dean for the privilege of substituting a thesis for any one of the required courses of the fifth year.

3. In his petition the student must state the subject which is to be investigated and give a brief statement of the purpose and scope of the proposed thesis.

4. Petitions for the privilege of writing theses must be submitted in writing to the Dean not later than the middle of the second college period of the junior year.

Typewriting

Since some skill in typewriting is so valuable in many types of Co-operative work, an optional program in typewriting is provided. Students meet twice a week for class instruction and then spend at least two hours a week in supervised practice in the typewriting laboratory. Although no academic credit toward the degree is given for this work, students are given certificates of proficiency.

NORTHEASTERN UNIVERSITY

COLLEGE OF ENGINEERING

Admission Requirements and Courses of Study

1950-1951



(COEDUCATIONAL)

BOSTON 15, MASSACHUSETTS
JANUARY, 1950

THE COLLEGE OF ENGINEERING

Aims and Methods

ENGINEERING has been defined as the art of applying the resources of material and power in nature to the use and convenience of man. The design and construction of bridges, power plants, water works, skyscrapers, industrial plants, machinery, transportation systems, and communications systems thus clearly fall within the scope of engineering. And as scientific research has advanced into new areas, the task of putting these discoveries to practical use has also fallen to the engineer.

Because an engineering education teaches the student to search out the truth, to think clearly, and to formulate conclusions based upon a solid foundation of facts, engineers are being called upon more and more to occupy positions of responsibility in the management of our great industrial enterprises. Even in such diverse fields as banking, public health, and public administration, this so-called engineering approach is in demand.

In consequence of this extremely wide field of endeavor open to engineers, the problem of providing a technical training adequate to cope with the design and construction of buildings, machinery, and equipment, and at the same time a training broad enough to develop a well-rounded personality and a sense of social responsibility, is by no means simple of solution. Northeastern University seeks, by means of its educational program, first of all to develop students of well-rounded personality capable of meeting and discharging their responsibilities as future citizens and leaders in their own communities. At the same time, the courses of study prescribed for students in the College of Engineering are designed to develop engineers technically competent to undertake professional responsibilities in their chosen fields of endeavor.

To this end, the College of Engineering offers separate curricula in five major branches of engineering, namely, civil, mechanical, electrical, chemical, and industrial. Since a basic training in science and mathematics is essential to all fields of engineering, the first year's curriculum is identical for all engineering students, and it is possible for any of them to change their field of specialization at the end of the first year without loss of time. Students are required to take a number of courses of a cultural nature designed to broaden their point of view and to help develop a well-balanced outlook. Individual laboratory instruction in addition to classroom work is employed as far as possible, and the Co-operative Plan of education, enabling the students to obtain a firsthand acquaintance with actual industrial and engineering operations, goes a long way toward bridging the gap between "theory" and "practice."

Admission Requirements

Applicants for admission to the freshman class must qualify by graduation from an approved course of study in an accredited secondary school, including prescribed subjects listed below.

Applicants are not required to take entrance examinations in high school subjects, but all candidates for the freshman class are asked to come to Northeastern University to take scholastic aptitude tests.

In the event that the distance to Boston from an applicant's place of residence is great, the Committee on Admissions is willing under certain conditions to make a decision on test results submitted by the College Entrance Examination Board.

Prescribed Subjects for Admission

College of Engineering

Algebra (quadratics and beyond)	2 units
Plane geometry	1 unit
Physics	1 unit
Science, social studies, mathematics and/or foreign language	6 units
English (four years)	3 units
Electives	2 units
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Total	15 units

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

Other Requirements

These formal requirements are necessary and desirable in that they tend to provide all entering students with a common ground upon which the first year of the college curriculum can be based. But academic credits alone are not an adequate indication of a student's ability to profit by a college education. Consequently, the Department of Admissions takes into consideration, along with the formal requirements stated above, other factors regarding candidates for the freshman class. A student's interests and aptitudes in so far as these can be determined, capacity for hard work, attitude toward classmates and teachers in high school, physical stamina, and most important of all, character, are considered. In this way the University seeks to select for its student body those who not only meet the academic admission requirements but who also give promise of acquitting themselves creditably in the rigorous program of training afforded by the Co-operative Plan and of being useful members of society.

Personal Interview

A personal interview is always preferred to correspondence, and parents are urged to accompany the applicant whenever this is possible.

Effective guidance depends in large measure upon a complete knowledge of a student's background and problems. Parents invariably are able to contribute information that aids the admissions officer in arriving at a decision.

Applicants who come from a distance are advised to write in advance to see if it is possible to arrange for an interview and for the required scholastic aptitude tests on the same day. The examinations are scheduled only on Saturday mornings, at dates to be announced. Office hours are from 9:00 A.M. to 4:00 P.M. daily; Saturdays to 12:00 M. The Department of Admissions will interview applicants on Wednesday evenings but by appointment only.

Application for Admission

Each applicant for admission is required to fill out an application blank stating previous education as well as the names of persons to whom reference may be made.

A fee of five dollars (\$5.00) is required when the application is filed. This fee is nonreturnable.

The last page of this catalog is in the form of an application blank. It should be filled out in ink and forwarded with the required five-dollar fee to Director of Admissions, Northeastern University, Boston 15, Massachusetts. Checks should be made out to Northeastern University.

Upon receipt of the application, properly filled out, the University secures the references and secondary school record. Applicants having satisfactory secondary school records are notified to report to the University to take special scholastic aptitude tests. As soon as possible after the Committee on Admissions has reviewed the results of these tests, a report of status with respect to admission will be sent to each candidate.

Early filing of applications is recommended.

The University reserves the right to place any entering student upon an indefinite trial period.

Tuition Deposit

Applicants accepted for admission must upon request pay a non-returnable tuition deposit of twenty-five dollars (\$25) as evidence of their bona fide intentions to matriculate.

Registration

Eligibility for admission does not constitute registration. Freshmen will register at the University on Wednesday, September 6, 1950, and Wednesday, November 15, 1950. Students are not considered to have met the requirements for admission until they have successfully passed the required physical examination.

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it, and they are approved by the Co-operative Work Department in an interview scheduled

in the late spring or summer previous to registration in September. Whenever a person enters with advanced standing and later proves to have had inadequate preparation in any prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their initial inquiry.

Graduation Requirements

The College of Engineering offers five-year curricula, conducted on the Co-operative Plan, leading to the following degrees:

1. Bachelor of Science in Civil Engineering
2. Bachelor of Science in Mechanical Engineering
3. Bachelor of Science in Electrical Engineering
4. Bachelor of Science in Chemical Engineering
5. Bachelor of Science in Industrial Engineering

These curricula are described in the following pages. Since the first year is the same for all engineering students, final choice of curriculum need not be made until the beginning of the second year.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify. A total of 232 credit hours is required for the degree. Students who undertake co-operative work assignments must meet the requirements of the Department of Co-operative Work before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive the S.B. degree until he has completed at least one academic year at Northeastern immediately preceding his graduation.

Scholarship Requirements

Students who fail to show a satisfactory standard of general efficiency in their professional fields may be required to demonstrate their qualifications for the degree by taking such additional work as the faculty may prescribe. If they are clearly unable to meet the accepted standard of attainment, they may be required to withdraw from the University.

Since the degree must represent competence in the student's chosen professional field, it cannot be awarded for mere low grade completion of the required courses.

Graduation With Honor

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least three years before they may become eligible for honors at graduation.

Engineering Curricula

1. Civil Engineering

The field of civil engineering has to do with the planning and building of all kinds of structures and public works. None of the structures of civil engineers lend themselves to quantity production in a factory. Not only are civil engineering works designed to fit a single location, but ordinarily their value is dependent upon their ability to resist forces tending to move them.

Civil engineering is as old as civilization itself and, until recent times, it embraced all phases of engineering except those of a military character. Today its major branches include topographical, municipal, railroad, highway, structural, hydraulic, and sanitary engineering. It covers land surveying, the building of railroads, soil mechanics, harbors, docks, and similar structures, the construction of sewers, water works, streets, and highways, the design and construction of flood control projects, bridges, buildings, walls, foundations, and all fixed structures.

Because civil engineering covers such a broad field, it is not possible to become expert in all its branches. All of these, however, rest upon a relatively compact body of principles and, broadly speaking, it may be said that the civil engineer deals largely with accurate descriptions of locations (surveys) and with applications of the mechanics of resistance to motion (statics).

Since the first step in every civil engineering project involves accurate measurement of the surface features of the land, of the nature of the soil, and of the character of the underlying rock, the study of surveying and related subjects occupies a large place in the civil engineering curriculum. And since the primary consideration in designing any structure is to make certain that it will withstand safely any forces to which it may be subjected, the mechanics of static bodies, strength of materials, and theory of structures are studied in detail. The curriculum is thus intended to prepare the young civil engineer to take up the work of design and construction of structures, to solve the problems of water supply and waste disposal in urban areas, and to undertake intelligently the supervision of work in allied fields of engineering and in general contracting.

Upon graduation, the young engineer may expect a period of apprenticeship either in the field, surveying and plotting, or in the office, over the drafting board. As experience is gained, the graduate is entrusted with greater responsibilities in actual design and supervision of construction. Those who prefer a roving existence should direct their ambitions toward private fields, while those who prefer a stable home and community life will seek opportunities in the public service of the Federal Government and the various states and municipalities.

Curriculum in Civil Engineering (1)

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
01	Chemistry	3	3	6	4	11-02	Chem.	3	3	6	4	11-03	Chem.	3	3	6	4
01	Drawing	0	6	3	3	12-02	Drawing	0	6	3	3	12-03	Drawing	0	6	3	3
01	Math.	5	0	7	4	14-02	Math.	5	0	7	4	14-03	Math.	5	0	10	5
01	Physics	3	0	6	3	15-02	Physics	3	0	6	3	15-03	Physics	3	0	6	3
01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
<hr/>						<hr/>						<hr/>					
14 11 23 17						14 11 28 17						14 11 31 18					

SECOND YEAR

TERM 4*					TERM 5					TERM 6				
04 Chemistry	3	3	6	2	20-11 Econ.	3	0	6	3	20-12 Econ.	3	0	6	3
04 Physics	3	0	6	1½	14-05 Diff. Calc.	4	0	8	4	14-06 Int. Calc.	4	0	8	4
04 Math.	5	0	10	2½	15-05 Physics	3	3	6	4	15-06 Physics	3	3	6	4
05 Am. Hist.	6	0	12	3	3-01 Elec. Eng.	3	0	6	3	3-02 Elec. Eng.	3	0	6	3
					1-10 Surveying	4	3	5	4	2-20 App. Mech.	4	0	8	4
	17	3	34	9		17	6	31	18		17	3	34	18

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
05 Am. Govt.	4	0	8	2	14-07 Diff. Eq.	4	0	5	3	41-06 Cons. Costs	3	3	6	4
30 Pwr. Pl. Eq.	5	0	10	2½	2-21 App. Mech.	3	0	6	3	2-22 Sgth.of Matls	4	0	8	4
04 Mach. Draw.	0	9	3	2	2-31 Thermo.	3	0	6	3	1-20 Hydraulics	3	0	6	3
50 Prod. Proc.	5	0	10	2½	1-11 Surveying	4	3	5	4	1-12 Surveying	4	3	5	4
					13-01 Gen. Geol.	3	0	6	3	13-11 Eng. Geol.	3	0	6	3
					2-40 Materials	2	0	4	2					
	14	9	31	9		19	3	32	18		17	6	31	18

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
07	Effec. Spkg.	6	0	12 3	2-23	Sgth. of Mtls.	3	0	6 3	1-54	Des. of Struc.	2	4	0 2
13	Surveying	0	18	0 3	1-40	Struc. Anal.	3	0	6 3	1-41	Struct. Anal.	4	0	8 4
17	Literature	6	0	12 3	1-49	Conc. T. Lab.	1	4	4 3	1-50	Concrete	3	0	6 3
					1-21	Hydraulics	3	0	6 3	2-64	Test. Mat. L.	1	4	4 3
					44-13	Cons. Fin.	3	0	6 3	2-24	Adv. Mech.	3	0	6 3
					24-07	Philosophy				24-08	Philosophy			
						or					or			
					25-07	Psychology	3	0	6 3	25-08	Psychology	3	0	6 3
			</											

FIFTH YEAR

TERM 13*					TERM 14					TERM 15							
03	Contracts & Agency	6	0	12	3	1-42	Struct. Anal.	3	0	6	3	1-43	Struct. Anal.	4	0	8	4
06	Municipal Gvt.	6	0	12	3	1-51	Concrete	3	0	6	3	1-57	Found. Eng.	2	0	4	2
	or					1-55	Des. of Struc.	3	6	0	3	1-56	Des. of Struc.	0	9	0	3
06	Rec. Eur. His.	6	0	12	3	1-24	San. Eng.	3	0	6	3	1-25	San. Eng.	3	3	6	4
18	Literature	6	0	12	3	1-30	Transp.	4	0	5	3	1-31	Transp.	2	0	4	2
						50-01	Prof. Dvlpmnt	3	0	6	3	22-08	Cur. Pol. Iss.				
												or					
												23-08	Cont. Orient	3	0	6	3
		18	0	36	9			19	6	29	18			14	12	28	18

Summer term — 5 weeks.

II. *Mechanical Engineering*

The field of mechanical engineering is concerned with the harnessing of power resources by means of machinery to perform useful work. With the increasing mechanization of all industry which has taken place during the last century, the field has so broadened as to include all lines of industry.

In contrast to the civil engineer who deals primarily with static forces, the mechanical engineer is more concerned with the mechanics of motion or kinetics. And because moving parts require constant care and adjustment, the mechanical engineer has the task not only of designing and installing complicated machinery but also of operating it efficiently after it has been installed.

Among the major branches of mechanical engineering are included combustion or power production engineering, machine and machine-tool design, railway mechanical engineering, automotive engineering, aeronautical engineering, refrigerating engineering, and air conditioning engineering. The construction and operation of furnaces, boilers, and engines, the design of all kinds of machinery from pocket watches to steel mills, the construction and operation of railway and other transportation equipment including automobiles and airplanes, and even control of atmospheric conditions by means of heating, and air conditioning equipment, all fall in this field.

Since machinery is so predominantly the concern of the mechanical engineer, the program of study is designed to give the student considerable training in the principles underlying the design and operation of engines, power transmission devices, machine tools, and other machinery. This, of course, implies a thorough study of the physical laws concerning motion and transfer of energy. Applied mechanics and thermodynamics occupy a prominent place in the curriculum. The program of instruction thus gives the student a broad foundation in those fundamental subjects essential to all engineering practice and, in the senior year, provides for limited specialization.

For those students desiring to specialize in the field of industrial management, attention is called to the curriculum in industrial engineering, the basic training of which is essentially the same as that in mechanical engineering.

The graduate mechanical engineer generally finds employment in an industrial plant, either in design and research or in plant operation and maintenance. And if one's abilities lie in that direction, one frequently is entrusted after a time with greater and greater responsibility for the successful management of the enterprise.

Curriculum in Mechanical Engineering (2)

FIRST YEAR

TERM 1					TERM 2					TERM 3							
No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
-01	Chemistry	3	3	6	4	11-02	Chemistry	3	3	6	4	11-03	Chemistry	3	3	6	4
-01	Drawing	0	6	3	3	12-02	Drawing	0	6	3	3	12-03	Drawing	0	6	3	3
-01	Math.	5	0	7	4	14-02	Math.	5	0	7	4	14-03	Math.	5	0	10	5
-01	Physics	3	0	6	3	15-02	Physics	3	0	6	3	15-03	Physics	3	0	6	3
-01	English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
-10	Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
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14 11 28 17						14 11 28 17						14 11 31 18					

SECOND YEAR

TERM 4*					TERM 5					TERM 6				
-04 Chemistry	3	3	6	2	20-11 Economics	3	0	6	3	20-12 Economics	3	0	6	3
-04 Physics	3	0	6	1½	14-05 Diff. Calc.	4	0	8	4	14-06 Int. Calc.	4	0	8	4
-04 Math.	5	0	10	2½	15-05 Physics	3	3	6	4	15-06 Physics	3	3	6	4
-05 Am. Hist.	6	0	12	3	3-01 Elec. Eng.	3	0	6	3	3-02 Elec. Eng.	3	0	6	3
					1-10 Surveying	4	3	5	4	2-20 App. Mech.	4	0	8	4
	17	3	34	9		17	6	31	18		17	3	34	18

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
05 Am. Govt.	4	0	8	2	3-03 El.Implement	2	2	5	3	14-07 Diff. Eq.	4	0	5	3
30 Pwr. Pl. Eq.	5	0	10	2½	2-21 App. Mech.	3	0	6	3	2-22 Sgth of Matls	4	0	8	4
04 Mach. Draw.	0	9	3	2	2-32 Ht.Eng.Ther	4	0	8	4	1-20 Hydraulics	3	0	6	3
50 Prod. Proc.	5	0	10	2½	5-10 Ind. Mgt. I	3	0	6	3	5-11 Ind. Mgt. II	2	0	4	2
					2-40 Materials	2	0	4	2	2-33 Ht. Eng.	3	0	6	3
					26-05 Social Probs.	3	0	6	3	22-06 Munic. Gov't				
										or				
										23-06 Rec. Eur. Hist.	3	0	6	3

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
-37 Htg. & Air					1-21 Hydraulics	3	0	6	3	2-24 Adv. Mech.	3	0	6	3
Cond.	6	0	12	3	2-23 Sgth of Matls	3	0	6	3	2-25 Aerodynam.	3	0	6	3
-17 Literature	6	0	12	3	2-34 Ht. Eng.	3	0	6	3	2-35 Ht. Eng.	4	0	8	4
-08 Cur. Pol. Iss.					2-60 Mech. Lab.	0	3	3	2	2-61 Mech. Lab.	0	4	5	3
or					2-10 Mechanism	0	6	6	4	5-14 Meth. Eng.	1	2	4	2
-08 Cont. Orient	6	0	12	3	24-07 Philosophy					24-08 Philosophy				
					or					or				
					25-07 Psychology	3	0	6	3	25-08 Psychology	3	0	6	3
	18	0	36	9		12	9	33	18		14	6	35	18

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
-41 Metallog.	4	4	10	3	2-26 Eng. Dyn.	3	0	6	3	2-38 Pwr. Pl. Eng.	4	0	8	4
-66 Mech. Lab.	3	6	9	3	2-11 Mach. Des.	0	6	3	3	2-12 Mach. Des.	0	9	6	5
-18 Literature	6	0	12	3	2-62 Mech. Lab.	0	4	5	3	2-63 Mech. Lab.	0	4	5	3
					1-46 Structs.	3	0	6	3	1-47 Structs.	3	0	6	3
					2-36 Ht. Eng.	3	0	6	3	30-07 Eff. Spkg.	3	0	6	3
					50-01 Prof. Divl pmt	3	0	6	3					
	13	10	31	9		12	10	32	18		10	13	31	18

Summer term — 5 weeks.

III. *Electrical Engineering*

Electrical engineering is still comparatively new; it was barely two generations ago that Thomas Edison built the first central electric power station in New York City, and it was only a generation ago that the radio made its first appearance. In consequence, we find this branch of engineering more closely related to research in pure science than are the older branches of civil and mechanical engineering. Moreover, the tremendous developments of the past decade in theoretical physics have been largely in areas closely related to electrical engineering as exemplified by Radar, Amplydine and similar tools used in World War II. So that today greater opportunities for intellectual pioneering appear to exist in this field of engineering than in other branches of the profession.

The electrical industry and the field of electrical engineering are usually divided into two main branches, one having to do with electrical power and the other, communications, with the field of electronics overlapping both. The power group deals principally with large equipment and apparatus employing heavy currents; the communications group handles smaller, more delicate equipment employing small or even minute currents. Electrical engineering thus embraces the generation, transmission, and distribution of electricity for light and power purposes, the operation of all types of electrical equipment including telephone, telegraph; and industrial electronics, radio, television and ultra-high frequency as well as lamps, motors, and household appliances. In addition, the field of illuminating engineering, having to do with the problems of proper light intensities, has in recent years assumed increasing importance.

Since electricity is without material embodiment and can be treated only by mathematical reasoning, the electrical engineer is frequently required to go into higher mathematics seldom used in other fields. It is also absolutely essential that the electrical engineer who hopes to make a success of his work be able to grasp readily and absorb effectively the meaning and content of the many scientific papers having to do with research in this field. For these reasons, the program of study in electrical engineering includes more work in the pure sciences of mathematics and physics than do the other courses, as well as a solid grounding in engineering fundamentals. This is followed by a thorough study of electrical theory and its applications in the power, high voltage, and electronics fields.

The profession of electrical engineering affords a wide diversification of employment opportunities. If one is research-minded, opportunity to develop one's talents may be found in one of the great laboratories; if one is more interested in plant problems, opportunity can be found in the manufacturing or operating organizations; and if one is sales-minded he may find a career as a sales engineer.

Curriculum in Electrical Engineering (3)

FIRST YEAR

TERM 1					TERM 2					TERM 3						
Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
01 Chemistry	3	3	6	4	11-02	Chemistry	3	3	6	4	11-03	Chemistry	3	3	6	4
01 Drawing	0	6	3	3	12-02	Drawing	0	6	3	3	12-03	Drawing	0	6	3	3
01 Math.	5	0	7	4	14-02	Math.	5	0	7	4	14-03	Math.	5	0	10	5
01 Physics	3	0	6	3	15-02	Physics	3	0	6	3	15-03	Physics	3	0	6	3
01 English	3	0	6	3	30-02	English	3	0	6	3	30-03	English	3	0	6	3
10 Phys. Tr.	0	2	0	0	16-11	Phys. Tr.	0	2	0	0	16-12	Phys. Tr.	0	2	0	0
	14	11	28	17			14	11	28	17			14	11	31	18

SECOND YEAR

TERM 4*					TERM 5					TERM 6				
04 Chemistry	3	3	6	2	20-11 Economics	3	0	6	3	20-12 Economics	3	0	6	3
04 Physics	3	0	6	1½	14-05 Diff. Calc.	4	0	8	4	14-06 Int. Calc.	4	0	8	4
04 Math.	5	0	10	2½	15-05 Physics	3	3	6	4	15-06 Physics	3	3	6	4
05 Am. Hist.	6	0	12	3	3-01 Elec. Eng. I	3	0	6	3	3-02 Elec. Eng. I	3	0	6	3
					30-17 Literature	3	0	6	3	2-20 App. Mech.	4	0	8	4
	17	3	34	9		16	3	32	17		17	3	34	18

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
05 Am. Govt.	4	0	8	2	14-07 Diff. Eq.	4	0	5	3	3-13 Elec. Meas.	3	0	6	3
30 Pwr. Pl. Eq.	5	0	10	2½	2-21 Appl. Mech.	3	0	6	3	2-22 Str. Mat.	4	0	8	4
04 Mach. Draw.	0	9	3	2	2-39 Heat Eng.	3	0	6	3	1-20 Hydraulics	3	0	6	3
50 Prod. Proc.	5	0	10	2½	3-10 D.C. Mach.	5	0	7	4	3-11 Adv. AC The.	3	0	6	3
					2-40 Materials	2	0	4	2	3-12 E.E. Lab. D.C.	1	3	2	2
					22-08 Cur. Pol. Iss.					22-06 Munic. Gov't				
					or					or				
					23-08 Cont. Orient	3	0	6	3	23-06 Rec. Eur. Hist.	3	0	6	3
	14	9	31	9		20	0	34	18		17	3	34	18

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
07 Effic. Spkg.	6	0	12	3	2-23 Str. Mat.	3	0	6	3	3-19 El.Fld.Theo.	3	0	6	3
36 E. Eng. Math.	6	0	12	3	3-15 Polyphase					3-20 Transformers				
10 Surveying	8	6	10	4	A.C. Circ.	3	0	6	3	Theory	3	0	6	3
					3-16 Electronics	3	0	6	3	3-21 Electronics	3	0	6	3
					3-17 Elec. Meas.	4	0	5	3	3-22 A.C.Test Lab.1	3	5	3	
					3-18 E.Meas. Lab.	0	3	6	3	3-23 Electronic Lab.1	3	5	3	
					24-07 Philosophy					24-08 Philosophy				
					or					or				
					25-07 Psychology	3	0	6	3	25-08 Psychology	3	0	6	3
	20	6	34	10		16	3	35	18		14	6	34	18

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
24 Electronic L.	2	6	10	3	3-26 Syn. Mach.	3	0	6	3	3-30 Ind. Mach.	3	0	6	3
25 Adv. Meas.L.	0	6	12	3	3-27 H. F. Eng.	3	0	6	3	3-31 H. F. Eng.	3	0	6	3
18 Literature	6	0	12	3	3-28 Trans.Lines					3-32 Filters	3	0	6	3
					& Ntwrk	3	0	6	3	3-33 H. Freq. Lab.	1	3	5	3
					3-29 Ad.F'ld Th.	3	0	6	3	3-34 Adv.E.E.Lab.	1	3	5	3
					3-35 Ind. El. Lab.	1	3	4	3	26-05 Soc. Probs.	3	0	6	3
					50-01 Prof.Dvlpmt	3	0	6	3					
	8	12	34	9		16	3	34	18		14	6	34	18

Summer term — 5 weeks.

IV. *Chemical Engineering*

The field of chemical engineering is relatively new. It has grown out of the discoveries in the chemical laboratories which have served as a foundation for a great many new industries whose production processes involve chemical as well as physical changes. Petroleum refining, coal carbonization, plastics, manufacture of nylon and cellophane, and hundreds of other industries require men and women trained in chemistry as well as in engineering. Many older industries such as foods, textiles, and leather are also employing chemical engineers.

The chemical engineer has been defined as a "professional man experienced in the design, construction, and operation of plants in which materials undergo chemical and physical change." It is the duty of the chemical engineer to reduce the costs, increase production, and improve the quality of the products in the industry.

The chemical engineer must possess a working knowledge of the fundamental sciences and must understand and know how to work with people. In addition it is necessary that the chemical engineer recognize clearly the "correct appraisalment of values and costs" and possess the ability to apply the knowledge possessed to the development and operation of chemical processes and plants.

In addition to the fundamental courses in chemistry, mathematics, and physics required of all engineering students, a considerable amount of time is devoted to more advanced work in chemistry as a foundation for the study of chemical technology. Instruction in the elements of mechanical and electrical engineering also gives the student a fairly broad engineering background upon which to base his study of chemical engineering unit operations. Courses of a more liberal nature are included in the curriculum in order that the student may broaden his educational background. Since the field of chemical engineering is so varied, the curriculum has been designed to give the students a broad training rather than a specialized training in one specific industry. It is believed that this training will enable the students readily to acclimate themselves to whatever industry they may choose to enter.

Because of the complex nature of many chemical processes and because of the difficulty of translating laboratory results into full-scale plant operations, there has developed in many chemical plants the so-called semi-works or pilot plant. Here new processes developed by the chemists in the research laboratory are put to the test of actual plant conditions on a small scale. And it is here that the young chemical engineers often find themselves upon graduation. If they are able to understand the chemist on the one side and the plant operator on the other, and if they are technically competent as well, they will soon find opportunity for advancement either in one of the technical branches of the industry, such as design, development, research, and production, or in the sales and management fields in which chemical engineering is essential.

Curriculum in Chemical Engineering (4)

1ST YEAR

TERM 1					TERM 2					TERM 3						
Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.	No.	Course	Cl.	Lab.	Pr.	Cr.
01 Chemistry	3	3	6	4	11-02 Chemistry	3	3	6	4	11-03 Chemistry	3	3	6	4		
01 Drawing	0	6	3	3	12-02 Drawing	0	6	3	3	12-03 Drawing	0	6	3	3		
01 Math.	5	0	7	4	14-02 Math.	5	0	7	4	14-03 Math.	5	0	10	5		
01 Physics	3	0	6	3	15-02 Physics	3	0	6	3	15-03 Physics	3	0	6	3		
01 English	3	0	6	3	30-02 English	3	0	6	3	30-03 English	3	0	6	3		
10 Phys. Tr.	0	2	0	0	16-11 Phys. Tr.	0	2	0	0	16-12 Phys. Tr.	0	2	0	0		
	14	11	28	17		14	11	28	17		14	11	31	18		

2ND YEAR

TERM 4*					TERM 5					TERM 6				
04 Chemistry	3	3	6	2	11-41 Chem. Lit.	1	0	2	1	14-06 Int. Calc.	4	0	8	4
04 Physics	3	0	6	1½	14-05 Diff. Calc.	4	0	8	4	15-06 Physics	3	3	6	4
04 Math.	5	0	10	2½	15-05 Physics	3	3	6	4	2-20 App. Mech.	4	0	8	4
05 Am. Hist.	6	0	12	3	11-11 Qual. Anal.	4	6	8	6	11-12 Quant. Anal.	4	6	8	6
					22-06 Munic.Govt.									
					or									
					23-06 Rec.Eur.His.	3	0	6	3					
	17	3	34	9		15	9	30	18		15	9	30	18

3RD YEAR

TERM 7*					TERM 8					TERM 9				
01 Flow Fluids	5	3	16	4	20-11 Economics	3	0	6	3	20-12 Economics	3	0	6	3
05 Am. Govt.	4	0	8	2	2-21 App. Mech.	3	0	6	3	2-22 Sgth of Matls	4	0	8	4
05 Soc. Probs.	6	0	12	3	2-32 Thermo.	4	0	8	4	11-30 Phys. Chem.	4	3	8	5
					14-07 Diff. Equa.	4	0	5	3	4-02 Ch. E. Calc.	2	0	4	2
					11-14 Quant. Anal.	3	6	6	5	41-06 Const. Costs	3	3	6	4
	15	3	36	9		17	6	31	18		16	6	32	18

4TH YEAR

TERM 10*					TERM 11					TERM 12				
02 Ch.E.Econ.	6	0	12	3	4-11 Unit Opera.	4	4	10	6	4-12 Unit Opera.	4	4	10	6
07 Literature	6	0	12	3	11-20 Org. Chem.	3	6	6	5	11-21 Org. Chem.	3	6	6	5
08 Cur. Pol. Iss.					11-33 Phys. Chem.	4	2	6	4	11-34 Phys. Chem.	4	2	6	4
or					24-07 Philosophy					24-08 Philosophy				
08 Cont. Orient	6	0	12	3	or					25-08 Psychology	3	0	6	3
					25-08 Psychology	3	0	6	3	25-08 Psychology	3	0	6	3
	18	0	36	9		14	12	28	18		14	12	28	18

5TH YEAR

TERM 13*					TERM 14					TERM 15				
03 Unit Opera.	3	6	9	3	4-31 Ch.Pr.Dev.	0	6	6	4	4-21 Chem. Plts.	4	0	8	4
07 Efec. Spkg.	6	0	12	3	3-04 Elec. Eng.	3	3	6	4	4-32 Ch. E. Des.	0	6	12	6
08 Literature	6	0	12	3	4-03 Ch.E.Ther.	4	0	8	4	4-23 Eng. Mats.	3	0	6	3
					11-22 Org. Chem.	3	0	6	3	3-05 Elec. Eng.	3	0	6	3
					50-01 Prof. Dvlpmt	3	0	6	3	11-25 Organ. Lab.	0	6	0	2
	15	6	33	9		13	9	32	18		10	12	32	18

Summer term — 5 weeks.

v. Industrial Engineering

It has become increasingly evident that the success of a business or industrial organization, large or small, is dependent upon the skillful direction, supervision, and co-ordination of the various parts of the enterprise. The competent performance of these functions requires a constant supply of industrial managers well trained in the intelligent utilization of men, materials, machines, and money. Industrial engineering is the profession which supplies such individuals who, by aptitude and preparation, are able to apply engineering and scientific principles to the varied problems in the field of production management and effect solutions in the best interests of capital, labor, and consumer.

About sixty years ago, Frederick W. Taylor undertook to apply to the problems of industrial management what we now call "the scientific method" or "the engineering approach." He reasoned that it was management's business to know what constituted a proper day's work and that the way to get the facts was through research and experiment on a scientific basis. He defined "scientific management" not as any device or scheme or gadget, but as a new outlook—a new viewpoint based upon a solid foundation of fact. The methods employed by Taylor and by those who came after him have undergone some modification, but the concept of scientific management which he formulated has gained wider and wider recognition from both employers and employees.

This growing recognition of the value of a scientific approach to the problems of industrial management early created a demand for men and women trained in engineering and science, who possessed a knowledge of business as well, to assume positions of administrative responsibility in industry. To meet this demand, courses were established in many engineering colleges to provide a thorough training in engineering fundamentals together with a specialized training in business administration, which would prepare the students for managerial responsibilities in technical industries. These curricula are variously entitled industrial engineering, administrative engineering or engineering administration, but all are designed to lead ultimately to positions of administrative or executive responsibility, rather than to positions which involve highly specialized engineering responsibility.

The curriculum in industrial engineering, then, provides a course of study which is essentially the same as that for mechanical engineering in the first three years. In the last two years, however, advanced engineering courses are replaced by courses in business management.

Upon graduation, the young industrial engineer may find his way into such factory staff departments as Methods Engineering, Production Planning and Control, Wage Administration, Quality Control, or Time Study. If he prefers, he may select work in Cost Accounting or Statistical Analysis; then again he may incline towards sales engineering activity and serve in the "field" as a Sales and Service representative.

More and more there is opportunity for the experienced Industrial Engineer to serve industry in a consulting capacity. Upon becoming especially skilled in his profession, he is called in by industry for assistance in the installation and maintenance of sound management principles, and to aid in the reorganization of enterprises which have failed.

Curriculum in Industrial Engineering (5)

FIRST YEAR

TERM 1					TERM 2					TERM 3				
No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.	No.	Course	Cl.	Lab.	Pr. Cr.
01	Chemistry	3	3	6 4	11-02	Chemistry	3	3	6 4	11-03	Chemistry	3	3	6 4
01	Drawing	0	6	3 3	12-02	Drawing	0	6	3 3	12-03	Drawing	0	6	3 3
01	Math.	5	0	7 4	14-02	Math.	5	0	7 4	14-03	Math.	5	0	10 5
01	Physics	3	0	6 3	15-02	Physics	3	0	6 3	15-03	Physics	3	0	6 3
01	English	3	0	6 3	30-02	English	3	0	6 3	30-03	English	3	0	6 3
10	Phys. Tr.	0	2	0 0	16-11	Phys. Tr.	0	2	0 0	16-12	Phys. Tr.	0	2	0 0
		14	11	28 17			14	11	28 17			14	11	31 18

SECOND YEAR

TERM 4*					TERM 5					TERM 6				
04 Chemistry	3	3	6	2	20-11 Economics	3	0	6	3	20-12 Economics	3	0	6	3
04 Physics	3	0	6	1½	14-05 Diff. Calc.	4	0	8	4	14-06 Int. Calc.	4	0	8	4
04 Math.	5	0	10	2½	15-05 Physics	3	3	6	4	15-06 Physics	3	3	6	4
05 Am. Hist.	6	0	12	3	3-01 Elec. Eng.	3	0	6	3	3-02 Elec. Eng.	3	0	6	3
					1-10 Surveying	4	3	5	4	2-20 App. Mech.	4	0	8	4
	17	3	34	9		17	6	31	18		17	3	34	18

THIRD YEAR

TERM 7*					TERM 8					TERM 9				
05 Am. Govt.	4	0	8	2	3-03 El.Implement	2	2	5	3	14-07 Diff. Equa.	4	0	5	3
30 Pwr. Pl. Eq.	5	0	10	2½	2-21 App. Mech.	3	0	6	3	2-22 Sgth of Mtls.	4	0	8	4
04 Mach. Draw.	0	9	3	2	2-32 Thermo.	4	0	8	4	1-20 Hydraulics	3	0	6	3
50 Prod. Proc.	5	0	10	2½	5-10 Ind. Mgt.	3	0	6	3	5-11 Ind. Mgt.	2	0	4	2
					2-40 Materials	2	0	4	2	2-33 Ht. Power	3	0	6	3
					26-05 Soc. Probs.	3	0	6	3	22-06 Munic. Govt.				
										or				
										23-06 Rec.Eur.Hist.	3	0	6	3
	14	9	31	9		17	2	35	18		19	0	35	18

FOURTH YEAR

TERM 10*					TERM 11					TERM 12				
37 Htg. & Air. C.	6	0	12	3	1-21 Hydraulics	3	0	6	3	2-61 Mech. Lab.	0	4	5	3
317 Literature	6	0	12	3	2-23 Sgth of Mtls	3	0	6	3	5-15 Methods Eng. II	2	4	4	2
208 Cur. Pol. Iss.					2-34 Ht. Eng.	3	0	6	3	42-10 Personnel	3	0	6	3
or					2-60 Mech. Lab.	0	3	3	2	41-07 Th. of Accts	4	0	8	4
208 Cont. Orient	6	0	12	3	2-10 Mechanism	0	6	6	4	20-22 Ind. Statistics I & II	2	5	3	
					24-07 Philosophy					24-08 Philosophy				
					or					or				
					25-07 Psychology	3	0	6	3	25-08 Psychology	3	0	6	3
	18	0	36	9		12	9	33	18		13	8	34	18

FIFTH YEAR

TERM 13*					TERM 14					TERM 15				
56 Mech. Lab.	3	6	9	3	2-11 Mach. Des.	0	6	3	3	5-18 Qual. Control	3	0	6	3
03 Contracts					41-08 Elmts of Cost					41-09 Elmts of Cost				
and Agency	6	0	12	3	Acctg.	2	2	5	3	Acctg.	2	2	5	3
18 Literature	6	0	12	3	20-23 Ind.Stat'ics	12	2	5	3	42-17 Prob.in Persnl.	3	0	6	3
					5-17 Prod.Pl. Con.	3	0	6	3	43-08 Sales Eng.	3	0	6	3
					5-16 Metd. Eng. II	2	5	3		44-14 Ind. Fin.	3	0	6	3
					50-01 Prof.Dvlpmt	3	0	6	3	30-07 Effec. Spkg.	3	0	6	3
	15	6	33	9		12	12	30	18		17	2	35	18

Summer term — 5 weeks.

Synopses of Courses of Instruction

On the pages which follow are given the synopses of courses offered in the several curricula of the College of Engineering. Curricula in each of the three colleges on the Co-operative Plan comprise 130 weeks of classroom instruction, namely, three ten-week periods in the freshman year and 100 weeks of upperclass work. On the Co-operative Plan, the upperclass courses are evenly distributed over four years so that each division of co-operative students has 25 weeks of college work, 26 weeks of co-operative work, and one week of vacation annually.

A complete list of the courses of instruction offered in each of the Day Colleges is included in a special section of the catalog beginning on page 196. This section lists the prerequisite and preparation requirements, class and laboratory hours per week, the number of hours normally required for study, and the number of credits which have been assigned to each course.

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

Accounting

41-06 Construction Costs—The fundamental concept of cost and the application of the basic principles of cost accounting to engineering works is the primary purpose of this course. The analysis of the elements of cost in the product unit, job costs, and total cost of construction is studied in detail. The use of cost records as a basis for the preparation of estimates on jobs to be undertaken, the comparison and analysis of estimated and actual cost, and the setting of standards is studied and applied through the working of practical problems.

The methods of assembling and presenting cost data and the use of cost records in measuring and evaluating the efficiency of performance of the organization and its several departments is fully developed.

41-07 Theory of Accounts—This course treats of the law of debit and credit, the principle of nominal accounts, the trial balance, and the balance sheet. Consideration will be given to the construction and interpretation of accounts.

41-08 Elements of Cost Accounting—This course is designed to meet the needs of the professional engineer. It studies collection of cost data, process and job cost, estimated and standard cost.

41-09 Elements of Cost Accounting—This is a continuation of 41-08. It emphasizes methods of costing, cost variations, and budgetary control.

Business Law

46-03 Contracts and Agency—The successful practicing engineer needs to be familiar with many legal and ethical principles in order to co-operate in his business relations with lawyers, his colleagues, and businessmen.

This course is designed to give a fundamental knowledge of basic legal principles to the engineering student through the study of the origin and development of law; the elements of contract, the agency relationship and its operation; the law of workmen's liens and the origin and expansion of the law in workmen's compensation.

Chemistry

11-01 General Chemistry—The fundamental ideas of matter and energy; the properties of gases; liquids and solids; atomic and molecular weight; equations; properties of solutions; classification of elements.

11-02 General Chemistry—Atomic structure and radioactivity; electrons and valence; ionic reactions; acids and bases.

11-03 General Chemistry—Chemistry of nonmetals; chemistry of metals; electrochemistry; industrial inorganic chemistry.

11-04 General Chemistry—Elements of organic chemistry; industrial organic chemistry.

11-11 Qualitative Analysis—Mass action law; ionic equilibria; solubility product; hydrolysis; principles of semi-micro technique; laboratory work is devoted to semi-micro method for analysis of anions and cations.

11-12 Quantitative Analysis—Theory and practice of volumetric analysis; weighing; titration; ignition; combustion.

11-14 Quantitative Analysis—Theory and practice of gravimetric analysis; mineral procedures; common technical methods.

11-20 Organic Chemistry—Reactions and properties of aliphatic compounds; class relationships; structural formulas; reaction mechanisms.

11-21 Organic Chemistry—Reactions and properties of aromatic compounds; importance and preparation of industrial aromatics.

11-22 Organic Chemistry—Reactions and properties of alicyclic and heterocyclic compounds; unit processes in organic chemistry; halogenation; oxidation, reduction; nitration; sulfonation; amination; and diazotization.

11-25 Organic Analysis Laboratory—Chemical and physical tests used in qualitative organic analysis; classification reactions; preparation of derivatives.

11-30 Physical Chemistry—Structure of matter: the three states of matter, solutions, colloidal dispersions, molecular and atomic structure.

11-33 Physical Chemistry—Classwork same as 11-31. Less laboratory work.

11-34 Physical Chemistry—Classwork same as 11-32. Less laboratory work.

11-41 Chemical Literature—Types of chemical journals; library procedure; problems in obtaining information.

Chemical Engineering

4-01 Flow of Fluids—A study of the methods of determining rates of flow and power consumption of fluids flowing through pipe lines. This course differs from the usual course in hydraulics chiefly in the amount of emphasis placed on the flow of gases and oils. Laboratory work is included.

4-02 Chemical Engineering Calculations—This is essentially a problem course developed around the study of fuels and combustion. Special attention is given to the principles underlying the methods of calculation, which are of value to the chemical engineer.

4-03 Chemical Engineering Thermodynamics—A study of the fundamental principles of thermodynamics as they apply to chemical engineering. The usefulness of thermodynamics to the chemical engineer for the purpose of determining properties of materials, energy balances, equilibrium conditions, and in determining the availability of energy, the driving force for all unit operations, is emphasized.

4-11 Unit Operations—This course consists of a study of the mechanical operations peculiar to the chemical industry. The unit operations studied are flow of heat, evaporation, and air conditioning. Experiments are performed on small-scale plant equipment that has been specially designed or selected for the purpose. Detailed reports are required.

4-12 Unit Operations—This course is a continuation of 4-11. The unit operations studied are drying, distillation, gas absorption, extraction, and crystallization. Experiments are performed in the laboratory on the unit operations studied.

4-13 Unit Operations—This course is a continuation of 4-12. The unit operations studied are filtration, mixing, crushing and grinding, size separation and conveying. Laboratory experiments are performed.

4-21 Chemical Plants—The object of this course is to present to the student a cross section of modern chemical and process industries. The

presentation is through the use of flow sheets with division into the unit operations and unit processes stressed. The chemistry involved, the equipment used, the energy requirements, and the economics of the processes are presented.

The basic inorganic and organic chemical industries are studied intensively and the similarities to other industries are considered.

Plant inspection trips serve to give practicality to the classroom discussion.

4-22 Chemical Engineering Economics—The fundamentals of economics and statistics previously acquired by the student are specifically applied to raw materials, markets, labor, power, fuel, water, transportation and similar economic factors as related to the chemical industry. Laws relating to waste disposal, nuisance, and patents are discussed.

4-23 Engineering Materials—A study of the properties of materials which chemical engineers utilize in their work. The effect of composition, heat treatment, and mechanical work upon the physical properties of metals and their alloys is emphasized. Other materials are studied in a similar manner.

The causes of corrosion and methods of preventing or minimizing the same are given particular attention.

4-31 Chemical Process Development—This course attempts to teach the fundamentals of research by determining the optimum conditions for carrying out some unit process. After a survey of the literature has been made, a research plan is formulated. Variables are noted and their effect on the chemical process determined through laboratory experiments. The writing of reports is an essential feature of the course.

4-32 Chemical Engineering Design—The design of equipment of commercial size forms the basis of the course. Design data are taken from the literature when it is available. Other data are obtained by experiment on small-scale industrial equipment in the laboratory. From these data and information acquired in previous courses, the commercial scale equipment is designed. Students qualified by industrial experience are sometimes assigned problems suggested by their co-operative employer which are worked out under the joint supervision of the plant engineers and the members of the staff.

Civil Engineering

1-10 Surveying—Fundamental and basic principles of surveying are presented to the student in this first course in surveying for the following topics: taping, compass, the level, differential leveling, profile leveling, the transit, closed traverse (D.M.D. method), stadia, and the proper

methods of plotting ordinary surveying data. The closed traverse is further studied with particular emphasis on the rectangular co-ordinate method of computing closed traverses. The ordinary procedures for balancing field data and methods of back traversing are thoroughly discussed, preparing the student for horizontal control as a basis for map projections or photogrammetry.

The laboratory portion of this course is devoted to the use and care of the tape, the level, and the transit; and the field work consists of practice taping, leveling, and turning of angles. The student is then required to run a closed differential level circuit, run a small tape and transit closed traverse, and to collect by stadia or by other methods physical features necessary to make a complete map of the traversed area.

1-11 Surveying—The first portion of this course deals with horizontal and vertical curves, thus providing the student with basic surveying data for "Route Surveying." Both the railroad curve and the highway curve (circular arc) are studied simultaneously. The rectangular co-ordinate method is used extensively in the study of horizontal control. The various field procedures used when collecting data for cross sections and the methods of obtaining cross-sectional areas are taught. From this raw earthworks data, the student is taught to prepare earthwork tables and diagrams culminating the earthworks portion of this course with the mass diagram solution.

The theory and use of the plane table (including the intersection problem, the resection problem, and three point problem) and the theory of the spiral or transition curve as applied to the railroad and the highway location are also studied.

The data as collected for the closed traverse in course 1-10 are used for complete traverse calculations, by both the D.M.D. and the rectangular co-ordinate methods. The closed traverse is plotted by co-ordinates, and a plan completed by plotting the physical details. At the conclusion of this semester's office work the student is required to submit an inked tracing of this map and a complete set of traverse calculations similar in all details to the requirements as set forth by the Massachusetts Land Court.

1-12 Surveying—The celestial sphere and a review of spherical trigonometry are studied as a basis of stellar and solar observations for latitude, longitude, time, and azimuth determinations. The above material is followed by the basic principles of geodetic surveying, namely precise leveling and triangulation; and this course concludes with a discussion of the basic principles of photogrammetry.

In the field portion of this course a random traverse is run as a "Route Survey," and the physical features are located with respect to this traverse. Using the above data, a map is prepared, a location line plotted upon this map, and then the location line is staked out on the ground in the field. At the conclusion of this semester's laboratory work, the student is required to submit a tracing of the map with the location line plotted thereon; and a complete set of calculations for the location line.

1-13 Surveying—This course is a continuation of the laboratory portion of course 1-12 where the following surveying problems are performed: precise and Coast and Geodetic leveling; cross sections; earthworks calculations; mass diagram solution; plane table problems; observations on the sun for latitude, longitude, time, and azimuth; observation on Polaris for azimuth; and basic problems of photogrammetry including differential parallax measurements.

1-20 Hydraulics—This course is divided into two parts, the first part which treats with the laws of hydrostatics, and the second part which deals with the laws of hydrokinetics.

Under the topic of hydrostatics the following material is studied: open end U gauges, differential manometers, pressure intensity, total pressures, location of center of pressure (horizontally and vertically), pressures on curved and inclined surfaces, hoop tension and end tension, simple dams, and flotation problems.

The laws of hydrokinetics, including those of the flow of liquids through Venturi meter, orifices, short tubes, pipe lines, and open channels are studied with particular reference to Bernoulli's theorem.

In the hydraulic demonstration laboratory the following demonstrations are made: Venturi meter, orifice meter (submerged orifice), discharge of orifice into the atmosphere, discharge through orifice or short tube under falling head, and trajectory of discharge for either a short tube or an orifice.

1-21 Hydraulics—This course is a continuation of Course 1-20. Equivalent pipes are studied by the Hazen and Williams' flow diagram method, and simple grid systems are studied by both the Hazen and Williams' equivalent pipe method and the Hardy Cross method. Rectangular weirs, with or without end contractions and with or without velocity of approach, together with triangular weirs are studied.

Dimensional analysis is presented to the student so that the student is capable of making model analyses by Froude's number and Reynolds' number. The flow of gases and fluids through closed conduits is considered by the application of Reynolds' number.

This section concludes with the study of open channel flow of the following topics: Lower alternate stage, critical velocity, upper alternate stage, hydraulic jump, and nonuniform flow of the drawdown curve and the backwater curve.

The following demonstrations are made in the hydraulics laboratory: rectangular weirs, triangular weir, pitot tube, and by Reynolds' number apparatus laminary and turbulent flow.

1-24 Sanitary Engineering—This is a general course in water supply engineering and the following items are studied: forecasting the future population of a given location; the quantity of water used by the various consumers; rainfall; runoff; storage of ground water and surface water supplies; dams, both earth filled and masonry; slow sand and rapid sand filters; treatment of waters for the removal of hardness, iron and other impurities; disinfection of waters; and the distribution system.

1-25 Sanitary Engineering—This is a companion course to 1-24. It deals with the collection and disposal of sewage and storm water, including the following items: the quantity of sewage and storm water to be collected; the combined or separate sewerage systems; the collection of data in order to prepare plans for the design and construction of collection systems, and a discussion of the modern methods of sewage treatment together with the operation of these treatment works.

The laboratory portion of this course is designed to familiarize the student with proper methods of collecting samples of water and sewage; transportation and storage of said samples; and the basic principles of water and sewage analysis for both chemical and bacterial properties.

1-30 Transportation—This course consists of a thorough discussion of traffic engineering, administration, surveys and plans of modern highways. The economics of highway rates of grade and general layout features, such as vertical curves, horizontal curves, superelevation, traffic control, accidents and general highway safety, are discussed.

Roadway foundations, grading and excavating equipment as well as highway drainage problems are also considered.

A study is made of soil tests and classifications. The elementary principles of soil mechanics as they are applied to highway and airport design and construction are considered.

The manufacture and testing of bituminous products as well as the construction of the low cost road types (earth and gravel) and methods of soil stabilization are included.

1-31 Transportation—A course which is a continuation of 1-30 and includes a detailed discussion of the design and construction of the higher cost types of roadways such as penetrated macadam, Portland cement concrete and asphaltic concrete pavements. A brief discussion of airport design and layout concludes the course.

The application of the latest research developments is considered throughout all phases of the material as given in both this course and 1-30.

1-40 Structural Analysis—This first of a series of four courses in structural analysis is devoted to a study of the algebraic and graphical methods of determining reactions, shears, moments and stresses developed by loads acting upon all kinds of statically determinate structures, such as simple roof trusses and simple bridges of the girder and truss type.

This is followed by a discussion of roof loads encountered in practice and the determination of design stresses for a typical roof truss.

Classes are conducted on both the lecture and recitation basis.

1-41 Structural Analysis—A continuation of 1-40, covering a discussion of the various types of girder, simple truss, and subdivided truss highway and railway bridges. Consideration is given to the dead load stresses developed in such structures and a complete study of influence lines is undertaken, together with their function in determining the shears,

moments and stresses produced by moving load systems, both distributed and concentrated, with their dynamic or impact effect. Upon conclusion of the dead, live, and impact stress studies, a discussion of design stresses is included.

This is followed by a consideration of lateral, sway, and portal bracing.

1-42 Structural Analysis—A continuation of 1-41, covering the slope and deflection of beams and girders by the method of work, the moment-area process, and the method of elastic weights; and, for truss deflections, by the method of work and the Williot-Mohr diagram.

1-43 Structural Analysis—Continuation of 1-42, covering the analysis of continuous beams, simple indeterminate trusses and frameworks (without and with sidesway) by the methods of least work, slope-deflection and moment distribution.

A study is made of the shears, moments, and stresses developed in tall building frames by the various conventional methods of treatment.

The course concludes with analyses for the internal effects developed in three-hinged arches and cantilever bridges.

1-46 Structures—This course, designed for mechanical engineering students, comprises a study of loads and the analysis of ordinary building frames and trusses encountered in this field, followed by the design of the members of such structures and their connections.

1-47 Structures—A continuation of 1-46, covering the transformed area method of design and analysis of reinforced concrete members such as beams and columns. The treatment of combined bending and axial loading follows and the course concludes with a study of the analysis and design of machine bases and foundations.

1-49 Concrete Testing Laboratory—This course covers the testing of Portland cement and aggregate as used in forming concrete. The cement tests include normal consistency, fineness, tensile strength, compressive strength, soundness and time of set. Some of the tests usually run on the aggregate include a test for organic impurities, surface moisture, effect of surface moisture (bulking), sieve analysis, structural strength, specific gravity, absorption, and unit weight.

Demonstration tests are run by the students to illustrate the water-cement ratio law as well as some of the factors affecting the strength of concrete, such as curing conditions and age. Discussions and laboratory tests are run on some of the various theories of proportioning concrete mixes. The course concludes with tests on brick as used in masonry construction.

1-50 Concrete—The fundamental principles involved in the theory of reinforced concrete behavior are thoroughly reviewed and investigated, and the transformed area method of design is developed. This is followed by the application of the method to the analysis and design of

elementary members such as the rectangular beam, the tee beam and beams reinforced in compression. Shear, diagonal tension, vertical and inclined stirrups, bond, and anchorage are also treated. In addition, a discussion of specifications and current standard practice is included.

1-51 Concrete—Continuation of 1-50, covering the analysis and design of centrally loaded tied and spiral columns with a study of the effects of shrinkage and plastic flow. This is followed by consideration of members subjected to combined bending and axial effects. The balance of the time is spent on the topics of earth pressure, the analysis and design of retaining walls, rectangular and flat slab construction and to the study and interpretation of the Joint Committee Report on Recommended Practice and Standard Specifications for Concrete and Reinforced Concrete as affecting such construction.

1-54 Design of Structures—This first course consists of lectures and problem work in the theory and practice of designing connections for various structural elements using rivets, welding and timber connectors. Consideration is given to connections for direct stress and eccentric loading. Bracket connections for fixed end beams are designed and detailed.

1-55 Design of Structures—This course is a continuation of 1-54 and consists essentially of the design of the individual members in a structural framework. Tension members, compression members (columns), bending members (beams), and combined direct and flexural stress members.

The latter part of the course consists of the comparative design of a typical interior bay of a building using one-way concrete slab with steel beams, concrete slab with T-beams, and flat slab constructions. Shop drawings are made of the steel beams. Each student uses different design data in working out these problems.

1-56 Design of Structures—This course consists of the design of reinforced concrete footings (spread footings, footings on piles, and combined footings). A design and shop drawing is made of a plate girder for a building or bridge. The design of continuous beams, both steel and concrete, concludes the course.

1-57 Foundation Engineering—By means of lectures and assigned readings and various methods of soil sampling, types of piles, pile driving equipment, pile loading capacity, the destructive action of marine borers and methods of prevention are studied. A discussion of the various types of caissons and cofferdams is included as well as methods of underpinning and the control of ground water in foundation construction. Consideration of dredging operations concludes the course.

Co-ordination

50-01 Professional Development—An over-all discussion of job-getting techniques covering in order such items as a survey of the occupational

field wherein the engineering training can be profitably applied, a market survey of opportunities, a study of the accepted techniques related to job-getting efforts, such as qualification records, prospect files, letter writing, interviews, etc., planning and executing the job-getting campaign.

Concurrently and co-ordinated with the foregoing, the purposes, objectives, and activities of the professional societies and of the Engineers' Council for Professional Development will be developed with specific reference to the ethics of the profession, the licensing of engineers, and after-college continuation of educational progress.

Drawing and Graphic Arts

12-01 Engineering Drawing—A course in fundamentals of the graphic language as used in engineering. It comprises a thorough study of multiplanar orthographic shape description as the foundation for a later study of working drawings. The work is laid out to include the following divisions: care and use of drawing equipment, freehand lettering, geometric constructions, multiplanar orthographic projection including primary and secondary auxiliary views, freehand and technical sketching.

12-02 Engineering Drawing—This is a continuation of Course 12-01 and includes a study of pictorial drawing; working drawings and applications of A.S.A. standards. Isometric, oblique, and angular perspective are studied in the pictorial field and sections, dimensioning, screw threads, fastenings, and ink tracing are applied to simple detail and assembly drawings. Pencil work on vellum is made suitable for the various reproduction processes.

12-03 Descriptive Geometry—This is a course in the theory of projection drawing. It is designed to develop powers of visualization and to solve, by revolution, auxiliary and direct method problems involving space relationships. In addition to problems with point, line, and plane, the course includes a study of intersection and development of surfaces, shadows, mining problems, graphic solution of stresses in framed structures, and other problems of a practical nature.

12-04 Machine Drawing—Detail working drawings of machine parts and assembly drawings of simple machines are made according to recommendations of the American Standards Association. Such simple phases of mechanism as are essential to a complete understanding of machine drawing are included in the course. Fastenings, machine parts and samples of small machines are made available for reference. Drawings are reproduced by students in blueprint, ozalid, blackline, and portagraph.

Economics

20-11 Economics—After an analysis of the main characteristics of our modern economic order, attention is turned to the fundamental eco-

conomic laws and principles governing the production of economic goods, the organization of business enterprise, money, banking, the business cycle, control of the price level, and international trade.

20-12 Economics—A continuation of 20-11. The first part of the course deals with the principles of price determination under competitive and monopolistic conditions, and the principles underlying the distribution of wealth and income into wages, interest, and profits. Consideration is then given to the major aspects of the economic problems of agriculture, public utility regulation, labor, consumption, public finance, and economic reform.

Electrical Engineering

3-01 Electrical Engineering I—This course is designed to give a sound limited background in the field of electrical engineering covered by the general topics of electric currents and conductors, electrical measuring instruments, measurement of resistances, electromotive force, electrical network theorems, electromagnetic induction, magnetic circuits, and magnetic forces. The material covered being supplemented by basic engineering problems covering these fields which the Civil, Mechanical, and Electrical student will meet in engineering work.

3-02 Electrical Engineering I—This course is a continuation of 3-01. It deals with electrical engineering in the field of Alternating Current covered by the general topics, instantaneous voltage, current, and power; effective current and voltage; average power; vector algebra (as applied to alternating current); sinusoidal single-phase circuit analysis. The problems covering these fields being basic in nature to the general engineering field.

3-03 Electrical Implementation—This course covers the basic theories of operation, methods of analysis, and engineering applications of various electrical devices. Three-phase electric circuits and magnetic-circuit theory are covered; and these principles, along with those covered in 3-01 and 3-02, are used in considering transformers, polyphase induction, synchronous motors, alternators, d-c motors and generators, small a-c motors, synchros, and amplidynes. Basic electronic theory is then presented and applied to the static operating characteristics and applications of high-vacuum and gas-filled tubes. Mathematical and graphical methods are given for analyzing the circuits used. Brief consideration is given to the application of negative feedback to amplifiers and automatic-control systems.

3-04 Electrical Engineering—This course is designed to meet the needs of the chemical engineering students in the application of electrical engineering to chemical industrial processes. Basic DC and AC circuits are studied as well as the elementary theory of DC and AC machines. Study is also made of the characteristics and circuit application of industrial electronic devices, including the thyatron and ignitron tubes, photoelectric tubes, and high-voltage rectifiers.

A laboratory course accompanies this lecture course, and the experiments include the characteristics of industrial-type tubes, phase-control and firing, amplifiers, rectifiers, and filter circuits, as well as the characteristics and circuit use of photo-tubes.

3-05 Electrical Engineering—This course is a continuation of 3-04 and develops the application to industrial processes of those devices studied in the previous course. Included for consideration are the ignitron rectifier, the thyatron inverter, electronic voltage and speed control of DC machines, induction and dielectric heating, electrostatic air purifying, resistance welding control, automatic synchronization of AC sources, and such process control as that of tension. A laboratory demonstration period accompanies the lectures.

3-10 Direct Current Machinery—This course deals with the principles of DC machinery, including structural parts of dynamos, armature windings, commutation, armature reaction, ratings, excitation methods, and operating characteristics of shunt, series, and compound generators. The principles of operation of DC motors are also studied with emphasis on shunt, series, and compound characteristics, stray power, efficiencies, and applications. Attention is also given to auxiliary protective and control devices as well as to work on DC power transmission.

3-11 Advanced Alternating Current Circuit Theory—In this course attention is given to those single-phase AC principles not taken in previous courses. The subject matter includes a study of AC transients in linear circuits, nonsinusoidal wave form analysis, effective resistance and reactance, and elementary filter circuits.

3-12 Electrical Engineering Laboratory—Direct Current—This is a laboratory course intended to develop a thorough understanding of the operation of DC machinery as studied in Course 3-10. Experiments include work on armature and field resistance measurements, shunt and compound generator characteristics, load tests on shunt, compound and series motors, and in addition experiments on stray power electrical supply of losses and retardation testing. This course also enables the student to develop an ability to make tests of engineering nature and to accumulate and present test data and calculations in the proper accepted report form.

3-13 Electrical Measurements—This course is designed to acquaint the student with the theory of precision measure as applied to electrical measurements in particular. Some of the subjects covered are theory of measurements, directly and indirectly measured quantities, recording of observations, rules of significant figures, classification of error, law of error, characteristics of error, and law of average deviation.

Most of the problems studied fall in the following two general classifications: (1) Given the precision measures of the directly measured quantities, to determine the precision measure of the indirectly measured quantity as calculated by the use of engineering equations which apply to measurements work. (2) Given the prescribed precision to be ob-

tained in the indirectly measured quantity, to determine the precision measure of the directly measured components which enter into its calculation.

In this course, parts and theory of operation of resistance devices, galvanometers, indicating instruments are discussed. This is followed by a detailed discussion of the methods of measuring various electrical quantities: resistance, resistivity, conductance; DC electromotive force, current, power, and energy.

The principles taught in this course are immediately applied in all experiments run in the measurements laboratory and so far as necessary in the machine testing laboratory.

3-15 Polyphase Alternating Current Circuits—This course deals principally with polyphase circuits. Voltage, current, and power relations in polyphase circuits are studied in detail with emphasis on three-phase conditions both balanced and unbalanced. Particular attention is given to the methods of measuring power in these cases and to the application of symmetrical phase components to the solution of unbalanced polyphase circuits. Included also is a study of methods of calculating short-circuit and incremental currents in polyphase power systems under fault conditions.

3-16 Electronics—This is an introductory course in electron tubes and is concerned with the motion of electrons in electric and magnetic fields, thermionic emission, static and dynamic vacuum tube characteristics, equivalent circuit methods, and graphical solutions. The object of the course is to give the student a thorough knowledge of the basic construction and operation of thermionic vacuum tubes and to demonstrate the mathematical and graphical procedures used in solving circuit problems.

3-17 Electrical Measurements—This course is a continuation of Electrical Measurements 3-13. The measurements of resistance, capacity, inductance, magnetic induction, AC power and energy are treated in this course with a detailed discussion of the methods of measuring them and the standards which apply. This phase of the subject involves the use of both visual and sound indicating devices, and includes some work with the use of circuits and bridges designed for high-frequency measurements, tube constant determination, attenuators, and attenuator design. In all this work the student is given a general discussion of the construction, theory of operation, methods of use, sources of error, etc., of the types of measuring instruments and bridges used in commercial and standardizing laboratories.

3-18 Electrical Measurements Laboratory—This course consists of a series of experiments emphasizing the principles developed in 3-13 and 3-17. The student becomes familiar with standard testing apparatus and procedure. The experiments include bridge measurements of resistance, inductance, and capacitance, standardizing and testing of instruments and meters. Experiments are also included on networks of various types.

3-19 Electric Field Theory—This course is designed to meet the requirement that the student who graduates with a bachelor's degree in electrical engineering have information concerning the fundamentals underlying the techniques of static and dynamic electric and magnetic field theory. The subject matter is taken up in the following order: electrostatics; vector analysis, unit vectors, vector algebra, gradient; divergence, curl, polar co-ordinates; theorems related to fields, curl, scalar potential, solenoidal fields, and vector potential; electrostatic fields, conductors, charged sphere, inverse square law, electrostatic energy; dielectrics, polarization; electric current, electromotive force; magnetic fields, magnetic force, magnetic flux, emf by motion, convention signs; fields and wire, magnetic flux linkages; examples and interpretation, boundary surface, fields within conductor, induction; Maxwell's field equations; plane waves, electric fields, magnetic fields, power and Poynting's Vector, reflection; radiation, magnetic vector potential, electrodynamic potential.

3-20 Transformer Theory—The purpose of this course is to present a detailed careful study of the construction, theory, and operation of transformers used in power work. Both single-phase and polyphase applications are involved, with particular emphasis on regulation and efficiency calculation and test methods. Special types of transformers, such as the constant current transformer, the autotransformer, and instrument transformers are also included.

3-21 Electronics—This course is a detailed study of the design, calculation, and operation of vacuum tube circuits. Among the topics considered are low power audio and radio frequency amplifiers, oscillators, modulators, detectors, and measuring equipment. In addition, an introduction to the performance of gas-filled tubes is given. Problems are solved on modern practical circuits and the student is given practice in both equivalent circuit and graphical methods of solution.

3-22 Alternating Current Test Laboratory—This is a laboratory course designed to present tests on alternating current circuits and transformers at power frequencies. It includes work on series and parallel R, L, C circuits, resonant conditions, power measurements by the two-wattmeter and polyphase wattmeter methods, load tests on transformers, polyphase transformer connections, and the constant-current transformer.

3-23 Electronics Laboratory—The experiments performed in this course are based upon the material given in 3-16. They include the determination of static and dynamic vacuum tube characteristics, tube constants, and the performance of tubes in amplifiers and similar circuits. Emphasis is placed upon checking experimental results with those obtained by calculation.

3-24 Electronics Laboratory—The experiments in this course deal with measurements at radio frequencies including broadcast-band and short

wave. The types of apparatus experimented upon include a typical superheterodyne receiver, detectors, Class C amplifier, reactance modulator, frequency discriminator, coaxial line, and matching networks. The student acquires practice and experience in using test equipment such as primary and secondary frequency standards, cathode-ray oscilloscopes, vacuum tube voltmeters, and frequency meters.

3-25 Advanced Measurements Laboratory—This laboratory course is a continuation of the work done in 3-18. The experiments are intended to give practice in more advanced methods of measurement and to give the student experience in using audio oscillators, vacuum tube voltmeters, cathode-ray oscilloscopes, and similar equipment. Typical experiments are concerned with filters, artificial lines, audio transformers, harmonic analysis, and radio frequency bridge measurements.

3-26 Synchronous Machinery—In this course a detailed study is made of alternating current synchronous machines. In addition to the study of the synchronous generator and the synchronous motor, considerable time is spent in discussing the problems involved in operating synchronous generators in parallel.

3-27 High Frequency Engineering—This course is based on the material covered in Electronics 3-16 and 3-21 continuing into the field of radio engineering, taking up the following topics: electron conduction of gases, glow and discharge tubes and circuits; power supplies, design and analysis; voltage and current stabilizers, Class B and AB₂ power amplifiers, Class C r.f. power amplifiers, trigger circuits, and pulse generators.

3-28 Transmission Lines and Networks—This course deals with those fundamental principles of the electrically long transmission line which are common to its use, throughout the entire range of frequencies, to the point where circuit theory must be replaced by field theory.

After a brief discussion of skin effect and the variation in the circuit "constants" R L C & G with frequency, the steady state of the line with various terminations is considered, followed by reflection phenomena, the quarter and half wave length (or integral multiples thereof) lines, under open and short circuit conditions, with special attention to the dissipationless and distortionless lines. Then the equivalent T and Pi networks in detail for uniform and composite lines, which is followed by a discussion of insertion loss, iterative and image impedance connections, and finally a thorough discussion of two terminal reactance arms potentially equivalent and inverse, together with a full consideration of Foster's Reactance Theorem.

3-29 Advanced Field Theory—This course is based on the material covered in Electric Field Theory 3-19. The material covered may be subdivided into three general classifications: antennas, propagation, and wave guides; the subdivision of these are antennas, low and high-frequency antennas, antenna arrays; propagation, general nature of propagation,

and dependence on frequency; wave guides; propagation through rectangular and circular guides, resonance phenomena in wave guides, application of resonant elements, practical utilization of wave guides.

3-30 Induction Machinery—This course is a continuation of 3-26. It deals with other types of alternating current machinery. The machines studied in detail include the synchronous converter, the mercury arc rectifier, single-phase and polyphase induction motors, induction generators, series and repulsion motors. The method of symmetrical phase components is used in the study of unbalanced conditions in certain types of motors.

3-31 High-Frequency Engineering—Continuation of High-Frequency Engineering 3-27, covering the following topics: power oscillators, U H F generators, negative grid oscillator, positive grid oscillator, velocity-modulated tubes and circuits, magnetron and special tubes; light sensitive tubes and cells, electron tube instruments and measurements.

3-32 Filters—This course is a continuation of 3-28; beginning with an introduction dealing with the purpose and use of filter networks in general, and next taking up in detail the four principal forms of Low-High- Band-pass and Band elimination; in the Constant K, m-derived and double m types. Then follow methods of improving constancy of image impedance by fractional and mm' terminating half sections; effects of dissipation in filters and methods for allowing and correcting for it; special arrangements in filters when operating in parallel to distribute a broad band of frequencies between different paths without interference.

Some attention lastly is given to the application of filters in power systems for machine-neutral wave-traps, and machine resonant shunts, line shunt filters for modifying resonant characteristics, and rectifying filters both AC and DC for preventing rectifiers from increasing harmonics in AC supply systems.

3-33 High-Frequency Laboratory—All of the experiments in this course are performed at frequencies above 300 megacycles. The equipment includes resonant line oscillators, ultra-high-frequency generators, antenna field pattern equipment, wave guides, resonators, and ultra-high-frequency meters. Typical experiments include the determination of field patterns from parasitic and driven antenna arrays, determination of the resonance curve of various resonators at 1000 megacycles, and calibration of an iris diaphragm at 3000 megacycles, etc.

3-34 Advanced Electrical Engineering Laboratory—In this laboratory course tests are performed on alternating current machinery involving work on synchronous motors, the brush-shifting motor, alternator load runs, parallel operation of alternators and synchronizing, and the squirrel cage and wound-rotor types of induction motors. Included also is work on the ignitron rectifier, inverter, electronically controlled synchronizing and AC generator voltage regulation.

3-35 *Industrial Electronics Laboratory*—This laboratory course is designed to show the application of electronic control devices to electrical machinery and to industrial processes. A study is made of the characteristics of those electron tubes used in industrial applications such as the thyatron and ignitron tubes. Experiments include the electronic control of voltage and speed in DC machines, the ignitron rectifier, the thyatron inverter, welding operations, induction and dielectric heating, automatic synchronization of 3-phase AC sources, and the precipitron.

3-36 *Advanced Mathematics for Electrical Engineers*—This course continues the study of ordinary linear differential equations started in 14-07, and offers the basic principles of partial differential equations. Special emphasis is placed upon the forms of the solutions of Laplace's equation and the wave equation in various co-ordinate systems. Also included is an introduction to operational calculus with application made to the solution of representative electrical circuits and mechanical systems.

English

30-01 *English I*—A review of basic sentence structure and the grammatical functions of clauses and phrases, followed by a study of effective sentence writing, paragraph development, and reading techniques. Theme assignments are planned to develop practical skill in each of the phases studied.

30-02 *English I*—A study of the structure and organization of written compositions: outlining, development of compositions by phases, and the analysis of expository writings. Experimental work in each phase is carried out by means of theme assignments and readings.

30-03 *English I*—A study of the problems peculiar to each of the four main types of discourse: exposition, description, narrative, and argument. Theme work includes, in addition to these basic types, some assignments in the framing of reports and the writing of business letters.

30-17 *Literature*—A course consisting of a careful study of four of Shakespeare's plays: *Henry the Fourth*, Part I; *Romeo and Juliet*; *The Tempest*; and *Othello*. The purpose of the course is twofold: to awaken an interest in and an appreciation of literature, and to develop in the student effective reading habits which will be serviceable to him in any reading he may do hereafter.

30-18 *Literature*—In purpose and method, a continuation of 30-17. Texts to be considered: Hawthorne's *Scarlet Letter*, Thoreau's *Walden*, Poe's *Poems and Short Stories*, and Mark Twain's *Huckleberry Finn*.

Finance and Insurance

44-13 *Construction Finance*—The financial problems confronting the setting up of engineering and construction organizations and the methods of providing funds to carry on projects constitute the subject matter to

be studied. This will include a consideration of the various forms of business organization from the legal as well as the operational point of view. The uses of capital stock, mortgage bonds, land trust certificates, purchase money mortgages, together with the importance of appraisals in the financing of public projects, projects of private enterprise, public utilities, and expansion of these services are studied. The problems of providing working capital and the use of bank credit are also considered.

44-14 Industrial Finance—This course covers the ways of financing a business, operating and fixed capital for long and short periods, for the different forms of business current in our economy. Emphasis will be placed upon the corporate forms and the part played by the government in financial control.

Geology

13-01 Geology—This introductory course in geology is designed primarily for civil engineering students.

The basic concept of the structure of the earth and a brief discussion of the significance of geological time serves as an introduction to this course. Among the other topics considered are rocks, rock making minerals, weathering, underground water, glacial action, and mountains. Considerable time is given to the discussion of surface water in its various locations such as rivers, lakes, swamps, and the sea and its action. The courses close with lectures on volcanism, deep seated igneous action and earthquakes.

The lectures are illustrated by lantern slides, films, and exhibits from a large collection of rocks and minerals available at the University.

13-11 Engineering Geology—Geology and its relation to such problems as highways, structures, tunnels, reservoirs, and dams. The emphasis is upon the practical application of the information acquired in 13-01, General Geology.

Industrial Engineering

5-10 Industrial Management I—The administrative and managerial aspects of factory and plant operation are given thorough treatment in this course. Emphasis is placed upon such managerial functions as budgeting; the selection of the factory location and factory machines and the maintenance of equipment; methods of analyzing production costs and the profit potentials of the business; plant layout, materials handling, and stores keeping; and product standardization, simplification, and specialization. The course is designed to bring to the student a realization of the social and economic significance of the "management movement," to give him an understanding of the management of the physical property of the plant and the organization of the physical plant itself.

5-11 Industrial Management II—This is a continuation of Course 5-10 Industrial Management I. It deals with the management of manpower and the control of plant operations. The over-all problem of effective utilization of men, materials, machines, and money is considered. These

management principles and practices which apply to this problem are presented from the standpoint of practical application under typical shop conditions with emphasis upon the "scientific approach."

Phases of management which are considered in some detail are organization and morale, selection and training, motion and time study, job evaluation and merit rating, wage payment plans, production planning and control, and cost control. At no time is the student permitted to lose sight of the impact of these managerial activities upon the type of labor-management relations which exist within the plant.

5-14 Methods Engineering—This course presents in detail the functions of the factory staff department commonly known as the Methods Department. These include process analysis through the use of process charts and flow diagrams; the principles and technique of plant layout; operation analysis through the use of operation charts, man-and-machine charts, time study, and micromotion study; the application of the principles of motion economy to all phases of factory operation, clerical and mechanical.

Complete laboratory facilities provide opportunity for the student to apply the subject matter of the course to a typical factory operation set up for this purpose. In the development of the laboratory project, particular attention is given to the method of approach, workplace layout, the elimination of fatigue through the use of labor-saving tools and equipment, and to the problems of installing the approved solution in the factory. Designed for students in mechanical engineering.

5-15 Methods of Engineering I—Similar to 5-14. For students in Industrial Engineering.

5-16 Methods Engineering II—Like the course in Methods Engineering I, the subject matter of Methods Engineering II deals with the activities of a staff department which aids in the "scientific managing" of the factory, in this case the Time Study Department. A discussion of wage incentive plans paves the way for a thorough understanding of the other topics treated in detail; relation of time study to motion study and micromotion study; time study technique and procedure; performance rating, development of concept of "normal," use of personal, fatigue, delay, and other allowances; the analysis of data, treatment of variables, and the preparation of standard data; setting job and element standards directly from time study versus the use of standard data; industrial relations problems connected with the application of time-studied wage incentive plans.

The use of the completely equipped laboratory makes possible the practical application of the principles presented, and permits a critical analysis of the value of the more familiar practices in the field. A highly important part of the course is the study of the use of elemental body motion time values for standard-setting and motion-analysis purposes versus the more conventional time study methods.

5-17 Production Planning and Control—This course deals with the highly important “operating management” activity of planning and controlling the flow of materials through the shop and the utilization of the equipment and manpower to best advantage. Although closely allied with the subjects of Methods Engineering, Time Study, and Quality Control, this function of production planning warrants separate treatment.

Included in the course is the following subject matter: factory organization, factory planning and layout, nomenclature, stores keeping control, development and engineering, planning procedure, scheduling, routing, dispatching, the use of special control charts and boards, forecasting and budgeting.

Of particular importance is the presentation of the special problems of production planning and control as related to the four main types of productive processes: (1) the job-shop type, (2) the mass-production type, (3) the available-equipment type, and (4) the co-ordinated-effort type.

5-18 Quality Control—The materials presented in this course are designed to give the student a working knowledge of the theory behind the control chart method and an appreciation of its use. The subject matter includes fundamentals of quality control, theory of control charts, analysis of control chart data, sampling methods, control chart applications, the Poisson distribution, planning for statistical quality control, acceptance sampling, control chart techniques, and industrial applications. Practical adaptations of the method in the solution of quality control problems from local industrial plants aid in familiarizing the student with the possibilities of Quality as a “tool of scientific management” for decreasing costs and increasing production.

Industrial Relations

42-10 Personnel—The purpose of this course is to survey the work of the personnel department. The what and how of the employment office will be analyzed along with the current practices in the conduct of human relationships in industry.

42-17 Problems in Personnel—This course is an examination of selected problems in industrial relations. The major portion will be devoted to a discussion of wage problems. Other problems such as testing, promotion, layoff, and government regulations will be covered.

Marketing and Advertising

43-08 Sales Engineering—This course deals with classification of commodities, structure of markets, and functions of the sales departments. It treats, also, the development of research and, finally, presents by the case method problems covering the broad field of sales management.

Mathematics

14-01 College Algebra—The study of algebra is scheduled to begin with the solution of the quadratic equation, simultaneous quadratics, and equations in quadratic form. However, a rapid but thorough review of the fundamentals of algebra precedes this. The solution of the quadratic is followed by a detailed study of the theory of exponents. Then follow radicals, series, variation, inequalities, and the elementary principles of the theory of equations. Considerable time is given to plotting and the use of graphs in the solution of equations. The elementary theory of complex numbers is also covered.

14-02 Trigonometry—This is a complete course in trigonometry and should enable the student to use all branches of elementary trigonometry in the solution of triangles as well as in the more advanced courses where the knowledge of trigonometry is essential. Some of the topics covered are the trigonometric ratios; inverse functions; goniometry; logarithms; circular measure; laws of sines, cosines, tangents, half angles; solution of oblique and right triangles; transformation and solution of trigonometric and logarithmic equations. Considerable practice in calculation of practical problems enables the student to apply his trigonometry to problems arising in practice at an early stage. Additional work, graphical and algebraic, is done with the complex number, introducing De Moivre's theorem and the exponential form of the complex number.

14-03 Analytic Geometry—This being a basic course in preparation for any further study of mathematics, it requires a thorough knowledge of the fundamentals of algebra. The course covers cartesian and polar coordinates; graphs; the equations of simpler curves derived from their geometric properties; thorough study of straight lines, circles, and conic sections; intersections and curves; transformation of axes; plotting and solution of algebraic equations of higher order and of exponential, trigonometric, and logarithmic equations; loci problems. The general equation of the second degree is thoroughly analyzed in the study of conic sections.

14-04 Introduction to Calculus—Explicit and implicit functions, dependent and independent variables, some theory of limits, continuity and discontinuity are given special attention from both the algebraic and the geometric points of view. Some theorems on the infinitesimal are introduced, and a study is made of infinity and zero as limits. Relative rates of change, both average and instantaneous, and the meaning of the slope of a curve follow. The differential and the derivative as applied to algebraic functions with the geometric interpretation are then studied. Tangents to curves of the second degree follow here. Simple applications with interesting practical problems help to develop the interest here and lay a solid foundation for the study of the calculus. The introduction of the differential at the same time with the derivative helps considerably to bridge the large gap which usually exists when the student passes from the study of the elementary analytic geometry to the infinitesimal of calculus.

14-05 Differential Calculus—The differential is introduced and defined at the outset of the course together with the derivative; geometric and practical illustrations are given of both, and both are carried along throughout the course. The work in the course consists of differentiation of algebraic, trigonometric, exponential, and logarithmic functions, both explicit and implicit; slopes of curves, maxima and minima with applied problems; partial differentiation; derivatives of higher order; curvature; points of inflection; related rates; velocities, acceleration; expansion of functions; series. Although the subject matter deals with considerable theory, constant sight is kept of the practical application of the theory. The geometric interpretation of every new subject is carefully defined and problems are continually solved dealing in practical applications of the theory in geometry, physics, and mechanics.

14-06 Integral Calculus—This is a continuation of Calculus 14-05, and deals with integration as the inverse of differentiation as well as the limit of summation. The topics covered are methods of integration; use of integral tables; definite integrals; double and triple integrals; areas in rectangular and polar co-ordinates; center of gravity; moment of inertia; length of curves; volumes of solids; areas of surfaces of revolution; volumes by triple integration; practical problems in work, pressure, etc., depending on the differential and integral calculus for solution; solution of simpler differential equations.

14-07 Differential Equations I—The elementary theory and solution of ordinary differential equations is offered here as a general course in mathematics. Although principally a problem course in solving differential equations, properties of equations and of their solutions are deduced, and applications to the various fields of science are analyzed.

Mechanical Engineering

2-10 Mechanism—This course includes mathematical and graphical solutions of problems involving angular and linear velocities and gear trains. It covers a careful study of parts of mechanical movements and the application of velocity diagrams, quick-return mechanisms, and cams. The theory of gear tooth outlines is illustrated by graphical methods, and various miscellaneous mechanisms are considered.

2-11 Machine Design—Practice is given the student in the application of theoretical principles previously studied, so that he becomes familiar with the many practical details which must be considered in design work. The problems taken up are both of a static and of a dynamic nature. Typical designs taken up include hydraulic press, hydraulic flanging clamp, crane, air compressor, punch and shear, stone crusher.

In each design, the construction details are carefully considered, with special attention to methods of manufacture, provision for wear, lubrication, and so forth. The work is based on rational rather than empirical methods, the student being required to make all calculations for determining the sizes of the various parts and all necessary working drawings.

2-12 Machine Design—This course comprises a continuation of Machine Design 2-11, with special reference to designs involving dynamic stresses. A thorough discussion of the principles and methods of lubrication forms a part of the course.

2-20 Applied Mechanics (Statics)—The subjects treated are collinear, parallel, concurrent, and nonconcurrent force systems in a plane and in space; the determination of the resultant of such systems by both algebraic and graphical means, special emphasis being placed on the string polygon method for coplanar force systems; the forces required to produce equilibrium in such systems; first moments as applied to varying intensity of force and to the determination of centers of gravity of areas and solids; second moments and problems involving static friction, such as the inclined plane and the wedge.

2-21 Applied Mechanics (Kinetics)—The subjects treated are second moments and their application to the determination of moment of inertia of plane and solid figures, radius of gyration, polar moment of inertia; product of inertia; principal axes; principal moments; uniform motion, uniformly accelerated motion, variable accelerated motion, harmonic motion, simple pendulum; rotation, plane motion; work, energy, momentum and impact.

2-22 Strength of Materials—The topics covered in this course are physical properties of materials, stresses in thin hollow cylinders and spheres, riveted connections of the structural and continuous plate type, welded connections; and beams, covering shearing force and bending moment diagrams, stress analysis of beams, and the design of beams.

2-23 Strength of Materials—This is a continuation of the subject matter of 2-22 covering the deflection of beams by the double integration and by the moment-area methods; indeterminate beams and continuous beams; torsion of circular shafts, including stress, horsepower and angle of twist; combined axial and bending loads; and column action in compression members.

2-24 Advanced Mechanics—The analysis of stress at a point is treated by analytical and graphical (Mohr's Circle) methods. An investigation of the existing theories of failure is made and the results applied to the special problems of thick hollow cylinders, shafting, curved bars in bending, nonsymmetrical bending, noncircular torsion, flat plates, and allied subjects leading to the applications of mechanics in machine design, the elastic theory, and photoelasticity.

2-25 Aerodynamics—The course comprises a study of the fundamental theory of aerodynamics which underlies all calculations concerning the performance and stability of airplanes including characteristics of airfoils and elementary propeller theory.

2-26 Engine Dynamics—The main considerations of this course are the discussion of mechanical vibrations, both free and forced types, particularly those of one degree of freedom and the balancing of engines. Coriolis' law; gyroscopic action; the principles of impulse and momentum both linear and angular, and impact are also treated.

2-30 Heat Engineering (Power Plant Equipment)—This course is largely descriptive, and covers most of the equipment used in modern power plants. Particular attention is given to modern boilers, and boiler accessories, ash and coal handling systems, the various types of engines with their valve gears and governing devices, condensers, feed water heaters and pumps. Steam turbines, gas turbines, and other prime movers are taken up.

2-31 Heat Engineering (Thermodynamics)—In this introductory course in the fundamentals of thermodynamics the following subjects are discussed: general theory of heat and matter; first and second laws of thermodynamics; equations of state; fundamental equations of thermodynamics; laws of perfect gases; properties of vapors including development and use of tables and charts; thermodynamic processes of gases, and saturated and superheated vapors; and the general equations for the flow of fluids.

2-32 Heat Engineering (Thermodynamics)—This course covers the same subjects as 2-31 but more extensively. In addition, some time is devoted to the General Equations of Thermodynamics.

2-33 Heat Engineering—The principles of thermodynamics are here applied to various problems of heat engineering. These include the fundamental laws governing the flow of gases and vapors through nozzles and orifices with and without friction; the theory of vapor engines, including discussions of the Rankine, the reheating, the regenerative, and the binary vapor cycles; and the efficiencies and power calculations for actual steam engines and steam boilers.

2-34 Heat Engineering—The principles of heat transfer for steady flow conditions and their applications to practical problems, and the analysis of single and multistage compressor cycles form the first part of this course. The balance of the time is devoted to the history, theory, equipment, and applications of mechanical refrigeration. This includes a study of the properties of refrigerants, simple and compound compression cycles, absorption system, and the jet or vapor system.

2-35 Heat Engineering—The various types of modern airplane, diesel, and automobile internal combustion engines are taken up in detail and the theory, analysis, and construction of such engines are carefully studied. The work includes the study of flame travel, the combustion process, efficiencies of the many cycles and types of engines used under different conditions.

The course is based mainly on theory but careful consideration is also given to these data compiled from research in the different phases of internal combustion engineering.

2-36 Heat Engineering (Steam Turbines)—A study is first made of the flow of steam through nozzles, dynamic action of jets on moving blades, and other elements in the design of steam turbines. This material is followed by a consideration of the various types of turbines, their governing mechanisms, condensing equipment, and other constructional details. The principles and performance of gas turbines are treated in the latter part of the course.

2-37 Heating and Air Conditioning—The important methods of heating and air conditioning various types of buildings are studied in this course. The principles of heat transfer and air flow are discussed and their application in the various systems are brought out through lectures and problems.

2-38 Power Plant Engineering—This course consists of topics and problems chosen largely from engineering practice selected to give to the engineering students a firm grasp of fundamental principles and engineering methods of attacking and analyzing problems in power plant, not only from the point of view of scientific theory, but also with due consideration of the limitations imposed by practice and by costs. Efficiency and operating costs of different types of plants such as steam, hydroelectric, and diesel engines are also carefully studied to determine the type of plant best suited for the conditions and location involved.

2-39 Heat Engineering—The fundamentals of thermodynamics are discussed as follows: general theory of heat and matter; first and second laws of thermodynamics; equations of state; laws of perfect gases; properties of vapors including development and use of charts and tables; thermodynamic processes of gases; saturated and superheated vapors. These fundamentals of thermodynamics will be applied to engine cycles and power plant cycles through the use of problems.

2-40 Materials—A study of the physical properties, composition, and to some extent the methods of production of the ferrous and nonferrous metals and their alloys, plastics, timber, lime, clay products, cement, and concrete.

2-41 Metallography—This course is designed to show the student the relation between the crystalline structure of metals and their physical properties.

The theory of crystallization and some of the various equilibrium diagrams are studied. Different metallic specimens of known composition are polished, etched, photographed, and studied by use of the metallograph and their physical properties are compared. The effect of heat treatment on the crystalline structure is noted.

2-50 Production Processes I—A course in the techniques, processes, and machines used in the production of manufactured articles.

Some of the processes covered are heat-treating, forging, welding, foundry practice, die casting, and plastics. The metallurgical principles involved are correlated with good shop practice in each case.

The construction, nomenclature, and operation of the following machine tools are discussed: lathe, milling machine, planer, shaper, broaching machine, and grinder.

2-60 Mechanical Engineering Laboratory—This course consists of a preliminary series of tests upon various types of apparatus used in steam power plants to illustrate under actual conditions the principles developed in Thermodynamics 2-32. These exercises are in preparation for more complete tests to be performed during the following semester in 2-61.

The following tests are illustrative of the type of work performed: calibration of gages, plain slide valve setting, tests on steam calorimeters, flow of steam through orifices, weir calibration, steam injector, tests on friction of drives, fuel calorimeters, and flow of water in pipes.

2-61 Mechanical Engineering Laboratory—This course comprises a series of tests on various types of power plant equipment, more complete than those made in Course 2-60. Included in the apparatus tested are the following: steam engine, gasoline engine, steam-driven air compressor, triplex power pump, steam pulsometer, rotary power pump, Pelton water wheel, centrifugal pump, air blower, and steam turbine.

A complete report is made on each test describing the machine tested, method of test, results, and discussion, all in accordance with the ASME Power Test Codes.

2-62 Mechanical Engineering Laboratory—The tests in this course deal mainly with the testing of materials of engineering which are of interest to the mechanical engineer. Correlation of the tests with the theories of strength of materials, with the heat treatment in the case of steels, and the compositions of brasses, bronzes, and alloy steels is an essential part of the work. In addition, some experiments relating to the fields of aerodynamics and the vibrations are also made.

2-63 Mechanical Engineering Laboratory—This is a continuation of 2-62. Included in the apparatus tested are the following: steam heating boiler, carrier air conditioner, unit heater, diesel engine, radiator test, oil testing, multistage centrifugal pump, Warren steam pump, hot air heater, and uniflow steam engine. A complete report is required for each test.

2-64 Testing Materials Laboratory—A detailed study is made of the methods of inspecting and the testing of the structural materials of engineering. Complete stress-strain diagrams are determined for metals in tension, evaluating the standard physical properties. Other tests are made for the hardness, elastic limit, transverse strength, torsional resistance,

compressive strength, column action, impact resistance, and bending properties of metals; compressive and transverse tests of timber and the correlation of these tests with the usual standards.

2-66 Mechanical Engineering Laboratory—This course consists of a study of the various methods in processing metals, and includes the study of machine tools, small tools, metal working costs, and a study of the most effective way of removing metal.

The course also includes a study of the heat treatment of tools, and the use of jigs and fixtures in the operation of modern manufacturing processes.

Physical Education

16-10-11-12 Physical Training—All first-year men students are required to take physical training. Health, strength, and vitality do not come by chance but by constant attention to those factors involved in their development. It is very essential for the student to acquire good habits of living.

The work in the course includes a formal calisthenic program, special exercise classes for the correction of postural defects, participation in the regular athletic program, including baseball, basketball, football, hockey, track, and many types of informal games. All members of the class are also required to learn to swim.

Students wishing to be excused from Physical Training because of physical defects are required to present a petition to the faculty supported by a physician's certificate.

Physics

15-01 Physics—A study of the fundamental principles of mechanics. The topics treated are kinematics, dynamics, and statics.

15-02 Physics—This course completes the study of mechanics, and starts the subject of electricity and magnetism. Energy, power, machines, vibratory motion, elasticity, fluids, magnetism, and electrostatics are studied.

15-03 Physics—Continues the subject of electricity. The topics covered are resistivity, circuits, electromagnetism, magnetic circuits, and condensers.

15-04 Physics—Completes the study of electricity. Basic principles of alternating current generation and series circuits, thermoelectric, photoelectric, and thermionic effects, and electromagnetic radiation are the topics studied.

15-05 Physics—A first course in the study of light, covering all the details within the scope of standard college texts on the subject. Lectures, demonstrations, and laboratory experiments on selected topics in mechanics and light.

15-06 Physics—A study of wave motion, sound, and heat. Lectures, demonstrations, and laboratory experiments, the latter covering topics in sound, heat, and electricity.

Statistics

20-22 Industrial Statistics—The increasing use of statistics in business and in the field of industrial engineering makes essential an understanding of the fundamental methods and applications of statistical analysis. In this course the important topics considered include the following: the collection of statistical data; the presentation of statistical data in tabular and graphic forms; and the uses and construction of frequency distributions, averages, measures of dispersion and skewness, and the normal curve. Specific attention is given to the practical uses and limitations of statistics in the work of the industrial engineer.

20-23 Industrial Statistics—Time series analysis receives major consideration in this course. The standard procedures for measuring, separating, and eliminating trend, periodic, seasonal, cyclical, and irregular movements of time series are carefully studied. Students are required to analyze a time series related to their co-operative employment or to a field of industry in which they have especial interest. The construction of index numbers, the use of currently published index numbers, correlation, and business forecasting complete the course content. Particular regard is paid to the internal use of statistics in industrial concerns.

Courses in the Humanistic — Social Sequence of the Engineering Curricula

22-05 American Government—An analysis of the structure and functions of American Government with emphasis upon its constitutional powers and limitations. Consideration is given to current problems of state and local government.

22-06 Municipal Government—Types of municipal government in the United States; legal relationship with county, state, and national government; with emphasis upon the machinery of municipal operations.

22-08 Current Political Issues—Analysis and background of current local, national, and international political issues.

23-05 American History—A study of the growth of American democracy, with particular attention to the economic phases of our development during the last half-century.

23-06 Recent European History—The application of the evolutionary idea to religion, psychology, sociology, economics, and everyday thinking in twentieth-century Europe and its problems of war and revolution.

23-08 *The Contemporary Orient*—The renaissance in twentieth-century Asia based upon the impact of western science on the age-old culture patterns found in India and the Far East.

24-07 *Foundations of Philosophy*—The importance and value of the field of philosophy to the practical human situations will be emphasized in this special course. The relation of philosophy to both science and religion will be discussed; and some of the great ideas and systems of thought of renowned world thinkers will be presented. The main purpose of this course is to enable the student to meet better the complex problems of life and to reach a more satisfying solution of them.

24-08 *Foundations of Philosophy*—A continuation of 24-07.

25-07 *Psychology*—A general survey course on the psychology of individual differences, personality, sensation, learning, emotion, and the like.

25-08 *Psychology*—A continuation of 25-07 in which general principles are considered from the viewpoint of problems arising in business and industry.

26-05 *Social Problems*—After giving attention to the nature, complex causation, and interrelatedness of social problems in general, careful consideration is given to a few major social problems.

30-07 *Effective Speaking*—A study of the report as a means of oral and written presentation of technical data. Reports of various types are planned and written. Considerable class time is devoted to the presentation of oral reports and oral summaries of written reports.

NORTHEASTERN UNIVERSITY

DAY COLLEGES

COURSES
OF INSTRUCTION

in
Liberal Arts
Business Administration
Engineering

1950-1951



BOSTON 15, MASSACHUSETTS
JANUARY, 1950

NORTHEASTERN UNIVERSITY

Courses of Instruction Offered in the Day Colleges

LISTED BELOW and on the following pages are the course offerings in the Day Colleges of Liberal Arts, Business Administration, and Engineering. While not all of the courses listed here are given every year, all will be offered during the normal period of each student's curriculum. The term "Prerequisite" indicates a course must be completed with a passing grade before a student will be permitted to register for an advanced course to which it applies. The term "Preparation" indicates a course of such a preparatory nature that students undertaking an advanced course without having had the Preparation course specified will ordinarily find themselves greatly handicapped and may not register in the advanced course without the consent of the Dean of the college involved.

A credit hour equals three clock hours of work: ordinarily one hour of class and two hours of preparation a week for a term of ten weeks. Credit hours can be converted to standard semester hours by multiplying by ten-sixteenths, the ratio of the number of weeks in the term to the usual number of weeks in the semester. Courses not included in the specified curricula may be taken only after the approval of the student's faculty adviser. Except where otherwise indicated, electives are not open to freshmen.

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Accounting</i>							
41-01	Principles of Accounting	—	—	4	0	8	4
41-02	Principles of Accounting	41-01	—	4	0	8	4
41-03	Principles of Accounting	41-02	—	4	0	8	4
41-06	Construction Costs	—	—	3	3	6	4
41-07	Theory of Accounts	—	—	4	0	8	4
41-08	Elements of Cost Accounting	41-07	—	2	2	5	3
41-09	Elements of Cost Accounting	41-08	—	2	2	5	3
41-21	Survey of Accounting Problems	41-03	—	4	0	8	4
41-22	Survey of Accounting Problems	41-21	—	4	0	8	4
41-23	Intermediate Accounting	41-03	—	4	0	8	4
41-24	Intermediate Accounting	41-23	—	4	0	8	4
41-30	Financial Statements	41-22	—	2	2	5	3
41-31	Cost Accounting	41-24	—	6	0	12	6
41-32	Cost Accounting	41-31	—	6	0	12	6
*41-33	Cost for Management	41-22	—	10	0	20	5
41-35	Advanced Accounting	41-24	—	2	2	5	3
41-36	Advanced Accounting	41-35	—	2	2	5	3

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Accounting—Continued</i>							
41-40	Advanced Accounting	41-36	—	2	2	5	3
*41-42	Budget Procedure	41-22	—	5	0	10	2½
41-43	Auditing	41-36	—	2	2	5	3
41-44	Auditing	41-36	—	2	2	5	3
41-55	C.P.A. Problems	41-40	—	4	4	10	6
41-56	C.P.A. Problems	41-55	—	4	4	10	6

Biology

10-01	General Zoology	—	—	2	3	4	3
10-02	General Zoology	—	10-01	2	3	4	3
10-03	General Botany	—	—	2	3	4	3
*10-04	General Botany	—	10-03	3	3	6	2
†10-05	Plant Ecology	—	—	2	6	4	4
†10-06	Plant Ecology	—	10-05	2	6	4	4
†10-07	Mycology	—	—	2	6	4	4
†10-08	Mycology	—	10-07	2	6	4	4
10-11	General Biology	—	—	2	3	4	3
10-12	General Biology	—	10-11	2	3	4	3
10-13	General Biology	—	10-12	2	3	4	3
*10-14	General Biology	—	10-13	3	3	6	2
10-20	General Bacteriology	10-04	—	2	6	4	4
		11-04	—	2	6	4	4
10-21	General Bacteriology	—	10-20	2	6	4	4
†10-22	Advanced Bacteriology	10-20	10-21	2	6	4	4
†10-23	Advanced Bacteriology	—	10-22	2	6	4	4
10-40	Physiology	—	10-56	4	0	8	4
10-41	Physiology	—	10-40	4	0	8	4
†10-42	Advanced Physiology	10-41	11-27	4	0	8	4
†10-43	Advanced Physiology	—	10-42	4	0	8	4
10-44	Nutrition	—	—	4	0	8	4
10-45	Nutrition	—	10-44	4	0	8	4
†10-46	Diet Therapy	10-45	—	4	0	8	4
†10-47	Diet Therapy	—	10-46	4	0	8	4
10-55	Comparative Vertebrate Anatomy	10-02	—	2	6	4	4
10-56	Comparative Vertebrate Anatomy	—	10-55	2	6	4	4
10-57	Invertebrate Zoology	10-02	—	2	6	4	4
10-58	Invertebrate Zoology	—	10-57	2	6	4	4
10-59	Animal Histology	—	10-56	2	6	4	4
10-60	Animal Histology	—	10-59	2	6	4	4
10-61	Embryology	—	10-56	2	6	4	4
10-62	Embryology	—	10-61	2	6	4	4
10-63	General Parasitology	—	10-58	2	6	4	4
10-64	General Parasitology	—	10-63	2	6	4	4
10-65	Genetics	—	10-04	4	0	8	4
†10-67	Mammalian Anatomy	10-56	—	1	8	3	4
†10-68	Mammalian Anatomy	—	10-67	1	8	3	4
†10-69	Histological Technique	10-60	—	2	6	4	4
†10-70	Histological Technique	—	10-69	2	6	4	4
†10-71	History of Biology	—	—	4	0	8	4
†10-72	History of Biology	—	10-71	4	0	8	4
10-73	General Entomology	—	10-56	2	6	4	4
10-74	General Entomology	—	10-73	2	6	4	4
10-75	Seminar	—	—	1	0	2	1
10-76	Seminar	—	10-75	1	0	2	1
10-77	Animal Ecology	—	—	2	6	4	4

*Summer term — 5 weeks.

†May be taken for graduate credit.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Biology — Continued</i>							
10-78	Animal Ecology	—	10-77	2	6	4	4
†10-100	Advanced Biology	—	—	To be arranged			
†10-101	Advanced Biology	—	10-100	To be arranged			
†10-102	Advanced Biology	—	10-101	To be arranged			
†10-103	Advanced Biology	—	10-102	To be arranged			
†10-104	Advanced Biology	—	10-103	To be arranged			
†10-105	Advanced Biology	—	10-104	To be arranged			
†10-106	Advanced Biology	—	10-105	To be arranged			
†10-120	Thesis	—	—	To be arranged			
†10-121	Thesis	—	10-120	To be arranged			
†10-122	Thesis	—	10-121	To be arranged			
†10-123	Thesis	—	10-122	To be arranged			
†10-124	Thesis	—	10-123	To be arranged			
†10-125	Thesis	—	10-124	To be arranged			
†10-126	Thesis	—	10-125	To be arranged			
†10-127	Thesis	—	10-126	To be arranged			
†10-128	Seminar	—	—	To be arranged			

Business Law

46-03	Contracts and Agency	—	—	6	0	12	3
46-41	Business Law I	—	—	4	0	8	4
46-42	Business Law II	46-41	—	4	0	8	4
46-51	Business Law III	46-41	—	4	0	8	4
46-52	Business Law IV	46-41	—	4	0	8	4
46-53	Income Tax Law	46-41 & 41-40	—	3	0	6	3
46-54	Income Tax Law	46-53	—	3	0	6	3
46-55	Labor Law	46-41 & 42-42	—	4	0	8	4

Business Management

45-21	Industrial Management	—	—	3	0	6	3
45-22	Industrial Management	—	45-21	3	0	6	3
45-30	Production Processes	—	45-22	4	0	8	4
45-32	Production Management	45-22	—	4	0	8	4
45-33	Management Problems	45-22	—	2	0	4	2
45-34	Management Problems	45-22	—	2	0	4	2
45-52	Management of Sales	45-34	—	2	0	4	2
45-53	Purchases & Procurement	45-34	—	3	0	6	3
45-54	Traffic Management	45-34	—	2	0	4	2
45-61	Seminar	—	—				
45-62	Seminar	—	—				

Chemistry

11-01	General Chemistry	—	—	3	3	6	4
11-02	General Chemistry	—	11-01	3	3	6	4
11-03	General Chemistry	—	11-02	3	3	6	4
*11-04	General Chemistry	—	11-03	3	3	6	2
11-09	Adv. Inorganic Chemistry	—	11-32	3	0	6	3
11-11	Qualitative Analysis	11-04	—	4	6	8	6
11-12	Quantitative Analysis	—	11-11	4	6	8	6
11-13	Quantitative Analysis	—	11-12	3	6	6	5
11-14	Quantitative Analysis	—	11-12	3	6	6	5

*Summer term — 5 weeks.

†These courses are for graduate credit only.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Chemistry — Continued</i>							
11-15	Instrumental Analysis	—	11-13	2	6	4	4
11-17	Quantitative Analysis	11-04	—	3	3	6	4
11-18	Quantitative Analysis	—	11-17	2	3	4	3
11-20	Organic Chemistry	—	11-13 or 11-14	3	6	6	5
11-21	Organic Chemistry	—	11-20	3	6	6	5
11-22	Organic Chemistry	—	11-21	3	0	6	3
11-23	Organic Analysis Laboratory	—	11-21	0	9	0	3
11-24	Organic Chemistry	—	11-23	3	6	6	5
11-25	Organic Analysis Laboratory	—	11-21	0	6	0	2
11-26	Organic Chemistry	—	11-04	5	6	10	7
11-27	Organic Chemistry	—	11-26	5	6	10	7
11-28	Biological Chemistry	—	11-27 or 11-22	3	6	3	4
11-29	Biological Chemistry	—	11-28	3	6	3	4
11-30	Physical Chemistry	11-12	11-13	4	3	8	5
11-31	Physical Chemistry	—	11-30	4	4	7	5
11-32	Physical Chemistry	—	11-31	4	4	7	5
11-33	Physical Chemistry	—	11-30	4	2	6	4
11-34	Physical Chemistry	—	11-33	4	2	6	4
11-35	Advanced Physical Chemistry	—	11-32	3	3	6	4
11-41	Chemical Literature	—	11-04	1	0	2	1
11-42	History of Chemistry	—	11-32	2	0	4	2
11-43	Thesis	—	11-32	0	9	0	3
11-44	Thesis	—	11-32	0	9	0	3
†11-100	Advanced Physical Chemistry	—	—	3	0	6	3
†11-101	Advanced Physical Chemistry	—	11-100	3	0	6	3
†11-102	Advanced Physical Chemistry	—	11-101	3	0	6	3
†11-103	Advanced Organic Chemistry	—	—	3	0	6	3
†11-104	Advanced Organic Chemistry	—	11-103	3	0	6	3
†11-105	Advanced Organic Chemistry	—	11-104	3	0	6	3
†11-106	Advanced Organic Chemistry	—	11-105	3	0	6	3
†11-107	Thesis	—	—	To be arranged			1
†11-108	Thesis	—	11-107	To be arranged			1
†11-109	Thesis	—	11-108	To be arranged			1
†11-110	Thesis	—	11-109	To be arranged			2
†11-111	Thesis	—	11-110	To be arranged			2
†11-112	Thesis	—	11-111	To be arranged			2
†11-113	Thesis	—	11-112	To be arranged			1
†11-114	Thesis	—	11-113	To be arranged			1
†11-115	Seminar	—	—	—			3-5

Chemical Engineering

* 4-01	Flow of Fluids	14-03	—	5	3	16	4
4-02	Chemical Engineering Calculations	11-12	—	2	0	4	2
4-03	Chemical Engineering Thermodynamics	2-32	—	4	0	8	4
4-11	Unit Operations	4-01 4-02	—	4	4	10	6
4-12	Unit Operations	4-01 4-02	—	4	4	10	6
* 4-13	Unit Operations	4-01 4-02	—	3	6	9	3
4-21	Chemical Plants	11-20	—	4	0	8	4
* 4-22	Chemical Engineering Economics	20-21	—	6	0	12	3
4-23	Engineering Materials	11-14	—	3	4	8	5
4-31	Chemical Process Development	4-12 4-11	—	2	6	4	4
4-32	Chemical Engineering Design	4-11 4-12	—	2	7	9	6

*Summer term — 5 weeks.

†These courses for graduate credit only.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Civil Engineering</i>							
1-10	Surveying	14-03	—	4	3	5	4
1-11	Surveying	1-10	—	4	3	5	4
1-12	Surveying	—	1-11	4	3	5	4
* 1-13	Surveying	1-12	1-12	0	18	0	3
1-20	Hydraulics	2-20	2-21	3	0	6	3
1-21	Hydraulics	1-20	1-20	3	0	6	3
1-24	Sanitary Engineering	1-21	—	3	0	6	3
1-25	Sanitary Engineering	—	1-24	3	3	6	4
1-30	Transportation	1-11	—	4	0	5	3
1-31	Transportation	—	1-30	2	0	4	2
1-40	Structural Analysis	2-22	2-22	3	0	6	3
1-41	Structural Analysis	—	1-40	4	0	8	4
1-42	Structural Analysis	1-41	1-41	3	0	6	3
1-43	Structural Analysis	—	1-42	4	0	8	4
1-46	Structures	2-23	—	3	0	6	3
1-47	Structures	—	1-47	3	0	6	3
1-49	Concrete Testing Laboratory	—	2-22	1	4	4	3
1-50	Concrete	2-22	2-23 & 1-49	3	0	6	3
1-51	Concrete	1-50	1-50	3	0	6	3
1-54	Design of Structures	2-22	—	2	4	0	2
1-55	Design of Structures	1-54	1-54	3	6	0	3
1-56	Design of Structures	—	1-55	0	9	0	3
1-57	Foundation Engineering	—	—	2	0	4	2

Co-ordination

50-01	Professional Development	—	—	3	0	6	3
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Drawing and Graphic Arts

12-01	Engineering Drawing	—	—	0	6	3	3
12-02	Engineering Drawing	12-01	—	0	6	3	3
12-03	Descriptive Geometry	—	12-01 & 12-02	0	6	3	3
*12-04	Machine Drawing	12-01 & 12-02	—	0	9	3	2

Economics

20-01	Economic Geography	—	—	3	0	6	3
20-02	Economic Geography	—	20-02	3	0	6	3
20-03	Economic Geography	—	20-03	3	0	6	3
20-05	Economic Geography	—	—	4	0	8	4
*20-09	Intro. to Statistics (Graphic Pres.)	—	—	3	6	9	3
20-11	Economics	—	—	3	0	6	3
20-12	Economics	—	20-11	3	0	6	3
20-13	Economic Principles	—	{ 20-03 B.A. 20-05 L.A.	4	0	8	4
20-14	Economic Problems	—	20-13	4	0	8	4
20-15	Economic Problems	—	20-14	4	0	8	4
20-16	Principles of Accounting	—	—	3	2	7	4
20-17	Principles of Accounting	—	20-16	3	2	7	4
20-18	American Economic History	—	{ 20-11 or 20-13	4	0	8	4

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Economics — Continued</i>							
20-20	Statistics	—	—	3	2	7	4
20-21	Statistics	—	20-20	3	2	7	4
20-22	Industrial Statistics I	—	—	2	2	5	3
20-23	Industrial Statistics II	—	20-22	2	2	5	3
20-24	Money and Banking	20-15	—	4	0	8	4
20-25	Business Cycles	—	20-14	4	0	8	4
20-25a	Business Cycles	—	20-14	3	0	6	3
20-26	Labor Economics	—	20-14	4	0	8	4
20-27	International Economic Relations	—	20-15	3	0	6	1½
20-28	Economic Systems	20-15L.A.	20-15B.A.	4	0	8	4
20-31	Advanced Economic Theory	—	20-15	4	0	8	4
20-32	Advanced Economic Theory	—	20-31	4	0	8	4
20-40	Business and Government	—	20-15	4	0	8	4
20-41	Business Policy	{ B.A. Seniors	—	4	0	8	4
20-51	Public Finance	—	20-40	3	0	6	3
20-61	Seminar	—	—	—	—	—	4
20-62	Seminar	—	20-61	—	—	—	4

Education

21-01	History of Education	—	—	4	0	8	4
21-02	History of Education	—	—	4	0	8	4
21-03	Educational Measurements	—	—	4	0	8	4
21-04	Educational Organization and Administration	—	—	4	0	8	4
21-05	Comparative Education	—	—	4	0	8	4
21-06	Educational Sociology	—	—	4	0	8	4
21-07	Educational Philosophy	—	—	4	0	8	4
21-08	Principles of Secondary Education	—	—	4	0	8	4
21-09	Methods of Teaching in Secondary Schools	—	—	4	0	8	4

Electrical Engineering

3-01	Electrical Engineering I	{ 15-03 15-04	—	3	0	6	3
3-02	Electrical Engineering I	—	3-01	3	0	6	3
3-03	Electrical Implementation	3-01 3-02	—	4	0	5	3
3-04	Electrical Engineering	{ 14-07 15-03	—	4	3	8	5
3-05	Electrical Engineering	{ 15-04 3-01	—	5	0	7	4
3-10	Direct Current Machinery	3-01	—	5	0	7	4
3-11	Adv. Alternating Current Circuit Theory	3-02	—	3	0	6	3
3-12	Elec. Eng. Lab., Direct Current	3-10	—	1	3	2	2
3-13	Electrical Measurements	—	3-01&3-02	3	0	6	3
3-15	Polyphase Alternating Current Circuits	3-11	—	3	0	6	3
3-16	Electronics	—	15-03&15-04	3	0	6	3
3-17	Electrical Measurements	—	3-13	4	0	5	3
3-18	Electrical Measurements Lab.	—	3-13	0	3	6	3
3-19	Electric Field Theory	{ 3-11 14-07	—	3	0	6	3
3-20	Transformer Theory	3-12	—	3	0	6	3
3-21	Electronics	—	3-16	3	0	6	3

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Electrical Engineering—Continued</i>							
3-22	Alternating Current Test Lab.	—	3-15	1	3	5	3
3-23	Electronics Laboratory	—	3-16	1	3	5	3
* 3-24	Electronics Laboratory	—	3-21 3-11 3-17	2	6	10	3
* 3-25	Adv. Measurements Laboratory	—	3-18 & 3-13 3-17 & 3-11	0	6	12	3
3-26	Synchronous Machinery	—	3-20	3	0	6	3
3-27	High-Frequency Engineering	3-16 3-21	—	3	0	6	3
3-28	Transmission Lines and Networks	—	14-07	3	0	6	3
3-29	Advanced Field Theory	3-19	—	3	0	6	3
3-30	Induction Machinery	—	3-26	3	0	6	3
3-31	High-Frequency Engineering	3-27	—	3	0	6	3
3-32	Filters	—	3-28	3	0	6	3
3-33	High-Frequency Laboratory	—	3-19 & 3-29 3-28 & 3-27	1	3	5	3
3-34	Adv. Electrical Eng. Lab.	—	3-26	1	3	5	3
3-35	Ind. El. Lab.	—	3-23 & 3-21	1	3	4	3
3-36	Advanced Eng. Math.	—	14-07	6	0	12	3

English

30-01	English I	—	—	3	0	6	3
30-02	English I	—	30-01	3	0	6	3
30-03	English I	—	30-02	3	0	6	3
*30-04	Introduction to Literature	—	30-03	5	0	10	2½
30-05	Public Speaking	—	—	4	0	5	3
30-06	Public Speaking	—	30-05	4	0	5	3
*30-07	Effective Speaking	—	—	6	0	12	3
30-08	Business Communication	—	30-04	3	0	6	3
30-09	Report Writing	—	—	3	0	6	3
30-10	Problems in Writing	—	—	3	0	6	3
30-17	Literature	—	—	6	0	12	3
30-18	Literature	—	—	6	0	12	3
30-21	Intermediate Writing	—	30-03	4	0	8	4
30-22	Intermediate Writing	—	30-21	4	0	8	4
30-23	Advanced Composition	—	30-22	4	0	8	4
30-24	Advanced Composition	—	30-23	4	0	8	4
30-27	Masters of the Drama	—	—	4	0	8	4
30-28	Masters of the Drama	—	—	4	0	8	4
30-29	Foundations of the English Lang.	—	—	4	0	8	4
30-30	Foundations of the English Lang.	—	30-29	4	0	8	4
30-31	Western World Literature	—	—	4	0	8	4
30-32	Western World Literature	—	30-31	4	0	8	4
30-33	Survey of English Literature	—	—	4	0	8	4
30-34	Survey of English Literature	—	—	4	0	8	4
30-35	American Literature to 1860	—	—	4	0	8	4
30-36	American Literature after 1860	—	30-35	4	0	8	4
30-37	Saxon and Anglo-Norman Lit.	—	—	4	0	8	4
30-38	English Lit. from 1200 to 1600	—	—	4	0	8	4
30-39	17th Century in England	—	—	4	0	8	4
30-40	17th Century in England	—	30-39	4	0	8	4
30-41	18th Century in England	—	—	4	0	8	4
30-42	18th Century in England	—	30-41	4	0	8	4
30-43	19th Century Prose	—	—	4	0	8	4
30-44	19th Century Prose	—	30-43	4	0	8	4
30-45	19th Century Poetry	—	—	4	0	8	4

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>English — Continued</i>							
30-46	19th Century Poetry	—	—	4	0	8	4
30-47	The Modern Novel	—	—	4	0	8	4
30-48	The Modern Drama	—	—	4	0	8	4
30-49	Modern Poetry	—	—	4	0	8	4
30-51	Introduction to Journalism	—	—	4	0	8	4
30-52	Introduction to Journalism	—	30-51	4	0	8	4
30-53	Techniques of Journalism	—	30-52	4	0	8	4
30-54	Techniques of Journalism	—	30-53	4	0	8	4
30-61	Shakespeare	—	—	4	0	8	4
30-62	Shakespeare	—	30-61	4	0	8	4
30-63	Chaucer	—	—	4	0	8	4
30-64	Chaucer	—	30-63	4	0	8	4
30-71	Seminar	—	—	—	—	—	4
30-72	Seminar	—	30-71	—	—	—	4

Finance and Insurance

44-13	Construction Finance	—	—	3	0	6	3
44-14	Industrial Finance	—	—	3	0	6	3
44-21	Principles of Banking	—	—	3	0	6	3
44-22	Principles of Insurance	—	—	3	0	6	3
44-31	Business Finance	—	44-21	4	0	8	4
44-32	Business Finance	44-31	—	4	0	8	4
44-33	Insurance Problems	44-22	—	3	0	6	3
44-34	Insurance Problems	44-22	44-33	3	0	6	3
44-41	Investments	44-32	—	3	0	6	3
44-42	Investments	44-41	—	3	0	6	3
44-51	Trust Management	44-42	—	3	0	6	3
44-52	Security Markets	44-42	—	3	0	6	3
44-53	Bank Management	44-42	—	3	0	6	3
44-54	Investment Banking	44-53	—	3	0	6	3

Fine Arts

27-01	History of Ancient Art	—	—	4	0	8	4
27-02	History of Early Christian and Medieval Art	27-01	—	4	0	8	4
27-03	History of Renaissance Art	27-02	—	4	0	8	4
27-10	History of American Art	—	—	4	0	8	4
27-11	History of Civilization	—	—	3	0	6	3
27-12	History of Civilization	—	27-11	3	0	6	3
27-13	History of Civilization	—	27-12	4	0	8	4
*27-14	History of Civilization	—	27-13	4	0	8	2

French

31-11	Introduction to French Lit.	—	2 yrs. of H.S.	3	0	6	3
31-12	Introduction to French Lit.	—	31-11	3	0	6	3
31-13	Introduction to French Lit.	—	31-12	3	0	6	3
*31-14	Introduction to French Lit.	—	31-13	3	0	6	1½
31-21	Modern French Literature	—	31-14 or 31-16	4	0	8	4
31-22	Modern French Literature	—	31-21	4	0	8	4
31-23	French Classicism	—	31-14 or 31-16	4	0	8	4
31-24	French Classicism	—	31-23	4	0	8	4
31-25	French Romanticism	—	31-14 or 31-16	4	0	8	4
31-26	French Romanticism	—	31-25	4	0	8	4

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
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French — Continued

31-31	Advanced Comp. & Convers'n	—	{ 31-22 31-24 or 31-16	4	0	8	4
31-32	Advanced Comp. & Convers'n	—	31-31	4	0	8	4

Geology

13-01	General Geology	—	—	3	0	6	3
13-02	General Geology	—	13-01	3	0	6	3
13-03	Historical Geology	—	—	4	0	8	4
13-04	Historical Geology	—	13-03	4	0	8	4
13-11	Engineering Geology	—	13-01	3	0	6	3

German

32-01	Elementary German	—	—	3	0	6	3
32-02	Elementary German	—	32-01	3	0	6	3
32-03	Elementary German	—	32-02	3	0	6	3
*32-04	Elementary German	—	32-03	3	0	—	1½
32-11	Introduction to German Lit.	—	{ 32-04 or 2 yrs of H.S.	3	0	6	3
32-12	Introduction to German Lit.	—	32-11	3	0	6	3
32-13	Introduction to German Lit.	—	32-12	3	0	6	3
*32-14	Introduction to German Lit.	—	32-13	3	0	6	1½
32-15	Intermediate German	—	32-04	4	0	8	4
32-16	Intermediate German	—	32-15	4	0	8	4
32-21	Modern German Literature	—	32-14 or 32-16	4	0	8	4
32-22	Modern German Literature	—	32-21	4	0	8	4
32-23	Classical Period of German Lit.	—	32-14 or 32-16	4	0	8	4
32-24	Classical Period of German Lit.	—	32-23	4	0	8	4
32-25	German Lit. of the 19th Cent.	—	32-14 or 31-16	4	0	8	4
32-26	German Lit. of the 19th Cent.	—	32-25	4	0	8	4
32-31	Adv. Comp. & Conversation	—	{ 32-22 32-24 or 32-26	4	0	8	4
32-32	Adv. Comp. & Conversation	—	32-31	4	0	8	4

Government

22-01	American Government	—	—	3	0	6	3
22-02	American Government	—	22-01	3	0	6	3
22-03	American Government	—	22-02	3	0	6	3
*22-05	American Government	—	—	4	0	8	2
22-06	Municipal Government	—	—	3	0	6	3
22-08	Current Political Issues	—	—	3	0	6	3
22-11	Foreign Governments	—	—	4	0	8	4
22-12	Foreign Governments	—	—	4	0	8	4
22-13	Political Theory	—	—	4	0	8	4
22-14	Political Theory	—	—	4	0	8	4
22-15	American Constitutional Law	—	—	4	0	8	4
22-16	American Constitutional Law	—	22-15	4	0	8	4
22-17	International Politics	—	22-03	4	0	8	4
22-18	International Organization	—	22-17	4	0	8	4
22-20	Public Administration	—	22-03	4	0	8	4
22-21	Public Administration	—	22-20	4	0	8	4
22-22	International Law	—	—	4	0	8	4
22-23	International Law	—	—	4	0	8	4

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>History</i>							
23-01	Western Civilization	—	—	4	0	8	4
23-02	Western Civilization	—	23-01	4	0	8	4
23-03	Western Civilization	—	23-02	4	0	8	4
*23-04	Western Civilization	—	23-03	4	0	8	4
*23-05	American History	—	—	6	0	12	3
23-06	Recent European History	—	—	3	0	6	3
23-08	Contemporary Orient	—	—	3	0	6	3
23-11	Europe 1789-1870	—	—	4	0	8	4
23-12	Europe since 1870	—	23-11	4	0	8	4
23-13	England to 1688	—	—	4	0	8	4
23-14	England since 1688	—	23-14	4	0	8	4
23-15	English Constitutional History	—	—	4	0	8	4
23-16	American Constitutional History	—	—	4	0	8	4
23-17	The United States to 1865	—	—	4	0	8	4
23-18	The United States since 1865	—	23-17	4	0	8	4
23-19	Latin America to 1800	—	—	4	0	8	4
23-20	Latin America since 1800	—	23-19	4	0	8	4
23-21	Far Eastern International Relations 1840-1900	—	—	4	0	8	4
23-25	Eastern Civilization to 1500	—	—	4	0	8	4
23-26	Eastern Civilization since 1500	—	—	4	0	8	4

Industrial Engineering

5-10	Industrial Management I	—	2-50	3	0	6	3
5-11	Industrial Management II	—	5-10	2	0	4	2
5-14	Methods Engineering	—	5-11	1	2	4	2
5-15	Methods Engineering I	—	5-11	1	2	4	2
5-16	Methods Engineering II	—	5-15	2	2	5	3
5-17	Production Planning & Control	—	5-11 5-15 desir- 5-16 able	3	0	6	3
5-18	Quality Control	—	20-22	3	0	6	3

Industrial Relations

42-10	Personnel	—	—	3	0	6	3
42-17	Problems in Personnel	—	—	3	0	6	3
42-41	Personnel Administration	45-34 & 25-24	—	3	0	6	3
42-42	Personnel Administration	42-41	—	3	0	6	3
42-44	Wage Administration	42-42	—	4	0	8	4
42-52	Motion & Time Study	45-34	—	2	2	5	3
42-58	Testing & Guidance	42-42 & 25-24	—	4	0	8	4
42-61	Seminar in Collective Bargaining	42-42	—	5	0	10	5
42-62	Seminar in Collective Bargaining	42-61	—	6	0	12	6

Marketing and Advertising

43-08	Sales Engineering	—	—	3	0	6	3
43-10	Conference Leadership	—	—	3	0	3	2
43-21	Principles of Marketing	—	—	3	0	6	3
43-22	Principles of Advertising	—	—	3	0	6	3
43-30	Salesmanship	—	43-21 & 43-22	4	0	8	4
43-31	Copy Writing	—	43-21 & 43-22	2	0	4	2
43-32	Sales Management	43-21 & 43-22	—	6	0	12	6
43-40	Advertising Production	43-22	—	4	0	5	3
43-43	Market Research	43-32	—	4	0	8	4

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Marketing and Advertising — Continued</i>							
43-44	Foreign Marketing	43-32	—	3	0	6	3
43-46	Credits & Collections	45-22	—	3	0	6	3
43-51	Sales Management	43-43	—	3	0	6	3
43-52	Store Management	43-32 or 45-52	—	4	0	8	4
43-53	Problems in Advertising	43-22	43-32	3	0	6	3
43-54	Problems in Advertising	43-53	—	3	0	6	3
43-62	Seminar in Marketing & Advertising	43-51	—	6	0	12	6

Mathematics

14-01	College Algebra	—	—	5	0	7	4
14-02	Trigonometry	—	14-01	5	0	7	4
14-03	Analytic Geometry	—	14-02	5	0	10	5
*14-04	Introduction to Calculus	—	14-03	5	0	10	2½
14-05	Differential Calculus	14-01	14-04	4	0	8	4
14-06	Integral Calculus	—	14-05	4	0	8	4
14-07	Differential Equations I	—	14-06	4	0	5	3
14-08	Differential Equations II	—	14-07	4	0	8	4
14-10	Analytic Mechanics	—	14-07	4	0	8	4
14-11	Curve Analysis	14-05	—	4	0	8	4
14-12	Modern Geometry	14-03	—	4	0	8	4
14-13	Spherical Trigonometry	14-02	—	4	0	8	4
14-14	History of Mathematics	—	14-06	3	0	6	3
14-15	Advanced Calculus	14-06	—	4	0	8	4
14-16	Advanced Calculus	—	14-15	4	0	8	4
14-17	Infinite Series	14-06	—	4	0	8	4
14-18	Theory of Equations	—	14-06	4	0	8	4
14-20	Special Topics in Math.	—	—	4	0	8	4
14-21	Basic Mathematics I	—	—	3	0	6	3
14-22	Basic Mathematics II	—	14-21	3	0	6	3
14-23	Basic Mathematics III	—	14-22	3	0	6	3
14-25	Mathematics of Finance	—	—	4	0	8	4
14-28	Probability and Statistics	14-06	—	4	0	8	4
14-29	Mathematical Statistics	—	14-29	4	0	8	4

Mechanical Engineering

2-10	Mechanism	—	2-21	0	6	6	4
2-11	Machine Design	—	2-24	0	6	3	3
2-12	Machine Design	—	2-11	0	9	6	5
2-20	Applied Mechanics (Statics)	15-02	—	4	0	8	4
2-21	Applied Mechanics (Kinetics)	—	2-20	3	0	6	3
2-22	Strength of Materials	2-20	2-21	4	0	8	4
2-23	Strength of Materials	2-22	—	3	0	6	3
2-24	Advanced Mechanics	—	2-23	3	0	6	3
2-25	Aerodynamics	—	2-21 & 1-21	3	0	6	3
2-26	Engine Dynamics	—	2-21 & 14-07	3	0	6	3
* 2-30	Heat Engineering (Power Plant Equip.)	—	—	5	0	10	2½
2-31	Heat Engineering (Thermo.)	—	15-06	3	0	6	3
2-32	Heat Engineering (Thermo.)	—	15-06	4	0	8	4
2-33	Heat Engineering	2-32	2-30	3	0	6	3
2-34	Heat Engineering	—	2-32	3	0	6	3
2-35	Heat Engineering	—	2-33	4	0	8	4

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Mechanical Engineering — Continued</i>							
2-36	Heat Engineering (Steam Turb.)	—	2-34	3	0	6	3
* 2-37	Heating & Air Conditioning	—	2-32	6	0	12	3
2-38	Power Plant Engineering	—	2-34	4	0	8	4
2-39	Heat Engineering	—	2-30	3	0	6	3
2-40	Materials	—	—	2	0	4	2
* 2-41	Metallography	—	2-50 & 2-40	4	4	10	3
* 2-50	Production Processes I	—	—	5	0	10	2½
2-60	Mechanical Engineering Lab.	—	2-30 & 2-33	0	3	3	2
2-61	Mechanical Engineering Lab.	—	2-34 & 2-60	0	4	5	3
2-62	Mechanical Engineering Lab.	—	2-23 & 2-40	0	4	5	3
2-63	Mechanical Engineering Lab.	—	2-61	0	4	5	3
2-64	Testing Materials Laboratory	—	2-23 & 2-40	1	4	4	3
* 2-66	Mechanical Engineering Lab.	—	2-50	3	6	9	3

Philosophy

24-01	Introduction to Philosophy	—	—	4	0	8	4
24-02	Problems of Philosophy	—	24-01	4	0	8	4
24-03	History of Philosophy	—	—	4	0	8	4
24-04	History of Philosophy	—	—	4	0	8	4
24-05	Philosophy of Religion	—	—	4	0	8	4
24-06	Logic	—	—	4	0	8	4
24-07	Foundations of Philosophy	—	—	3	0	6	3
24-08	Foundations of Philosophy	—	—	3	0	6	3

Physical Education

16-10	Physical Training	—	—	0	2	0	0
16-11	Physical Training	—	16-10	0	2	0	0
16-12	Physical Training	—	16-11	0	2	0	0
16-21	Principles of Physical Education	—	—	4	0	8	4
16-22	Play and Recreation	—	—	4	0	8	4
16-23	History of Physical Education	—	—	4	0	8	4
16-24	Admin. of Physical Education	—	—	4	0	8	4
16-25	Football	—	—	4	0	8	4
16-26	Track & Field Events	—	—	4	0	8	4
16-27	Basketball & Baseball	—	—	4	0	8	4

Physics

15-01	Physics	—	—	3	0	6	3
15-02	Physics	—	15-01	3	0	6	3
15-03	Physics	—	15-02	3	0	6	3
*15-04	Physics	—	15-03	3	0	6	1½
15-05	Physics	—	15-04	3	3	6	4
15-06	Physics	—	15-04	3	3	6	4
15-07	Survey of Physical Sciences	—	—	3	0	6	3
15-08	Survey of Physical Sciences	—	15-07	3	0	6	3
15-09	Survey of Physical Sciences	—	15-08	3	0	6	3
*15-10	Survey of Physical Sciences	—	15-09	4	0	8	2
*15-11	General Physics	—	14-23	6	0	12	3
15-12	General Physics	—	15-11	3	3	9	5
15-13	General Physics	—	15-12	3	3	9	5
15-14	Advanced Physics	—	15-06 14-06	2	2	5	3
15-15	Advanced Physics	—	15-06 14-06	2	2	5	3

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Physics — Continued</i>							
15-16	Elec. and Magnetism	15-06 14-06	—	3	0	6	3
15-20	Optics	15-06 14-06	—	3	3	6	4
15-21	Optics	—	15-20	3	3	6	4
15-22	Acoustics	15-06 14-06	—	3	3	6	4
15-23	Acoustics	—	15-22	3	3	6	4
15-24	Electronics	—	15-16	3	2	7	4
15-25	Electronics	—	15-24	3	2	7	4
15-26	Modern Physics	15-06 14-06	—	4	0	8	4
15-27	Modern Physics	—	15-26	4	0	8	4
15-28	Elec. Instruments	—	15-25	2	4	6	4
15-29	Radio Communications	—	15-25	3	2	7	4
15-65	Thesis	—	—				
15-66	Thesis	—	15-65				
<i>Psychology</i>							
25-01	Introductory Psychology	—	—	4	0	8	4
25-02	General Psychology	—	25-01	4	0	8	4
25-05	Applied Psychology	—	{ 25-03 or 25-07	3	0	6	3
25-07	Psychology	—	—	3	0	6	3
25-08	Psychology	—	25-07	3	0	6	3
25-09	Statistics in Psychology	—	25-02	4	0	8	4
25-10	Statistics in Psychology	—	25-09	4	0	8	4
25-11	Individual Differences	—	25-02	4	0	8	4
25-12	Experimental Psychology	—	25-02	3	3	6	4
25-13	Experimental Psychology	—	25-02	3	3	6	4
25-14	Experimental Psychology	—	25-02	3	3	6	4
25-15	Educational Psychology	—	25-02	4	0	8	4
25-16	Educational Psychology	—	25-15	4	0	8	4
25-17	Measurements I	—	25-11	4	0	8	4
25-18	Measurements II	—	25-17	4	0	8	4
25-19	Measurements III	—	25-18	4	0	8	4
25-29	Psychology of Personality	—	25-02	4	0	8	4
25-31	Abnormal Psychology	—	25-29	4	0	8	4
25-32	Abnormal Psychology	—	25-31	4	0	8	4
25-33	Social Psychology	—	25-02	4	0	8	4
25-34	Child Psychology	—	25-02	4	0	8	4
25-35	Industrial Psychology	—	25-11, 25-18	4	0	8	4
25-36	Industrial Psychology	—	25-35	4	0	8	4
25-38	Physiological Psychology	—	25-02	4	0	8	4
25-39	Physiological Psychology	—	25-38	4	0	8	4
25-41	Advanced Psychology	—	25-11, 25-17	4	0	8	4
25-42	Advanced Psychology	—	25-41	4	0	8	4
25-61	Directed Study	—	—	4	0	8	4
25-62	Directed Study	—	—	4	0	8	4
25-71	Seminar	—	—	2	0	1	1
25-72	Seminar	—	—	2	0	1	1
25-73	Seminar	—	—	2	0	1	1
25-74	Seminar	—	—	2	0	1	1
<i>Sociology</i>							
26-01	Principles of Sociology	—	—	4	0	8	4
26-02	Principles of Sociology	—	26-01	4	0	8	4
26-05	Social Problems	—	—	3	0	6	3

*Summer term — 5 weeks.

Course No.	Course	Pre-requisite	Preparation	Class	Lab.	Prep.	Credit
<i>Sociology — Continued</i>							
*26-07s	Sociology	—	—	5	0	10	2½
26-11	Social Problems	—	26-02	4	0	8	4
26-12	Social Problems	—	26-11	4	0	8	4
26-13	Social Ethics	—	26-02	4	0	8	4
26-13a	Social Ethics	—	—	3	0	6	3
26-14	Social Ethics	—	26-13	4	0	8	4
26-15	The Family	—	26-02	4	0	8	4
26-16	Criminology	—	26-02	4	0	8	4
26-17	Urban Sociology	—	26-02	4	0	8	4
26-18	Social Progress	—	26-12	4	0	8	4
26-19	Sociological Theory	—	26-12	4	0	8	4
26-20	American Social Thought	—	26-12	4	0	8	4
26-21	Sociology of Religion	—	26-12	4	0	8	4
26-22	Principles of Social Work	—	26-12	4	0	8	4
26-24	Social Control	—	—	4	0	8	4
26-61	Seminar	—	—	—	—	—	4
26-62	Seminar	—	26-61	—	—	—	4

Spanish

33-01	Elementary Spanish	—	—	3	0	6	3
33-02	Elementary Spanish	—	33-01	3	0	6	3
33-03	Elementary Spanish	—	33-02	3	0	6	3
*33-04	Elementary Spanish	—	33-03	3	0	6	1½
33-11	Introduction to Spanish Lit.	—	{ 33-04 or 2 yrs. of High Schl	3	0	6	3
33-12	Introduction to Spanish Lit.	—	33-11	3	0	6	3
33-13	Introduction to Spanish Lit.	—	33-12	3	0	6	3
*33-14	Introduction to Spanish Lit.	—	33-13	3	0	6	1½
33-15	Intermediate Spanish	—	33-04	4	0	8	4
33-16	Intermediate Spanish	—	33-15	4	0	8	4
33-21	Spanish Lit. of the Golden Age	—	33-14 or 33-16	4	0	8	4
33-22	Spanish Lit. of the Golden Age	—	33-21	4	0	8	4
33-23	Modern Spanish Literature	—	33-14 or 33-16	4	0	8	4
33-24	Modern Spanish Literature	—	33-23	4	0	8	4
33-25	Modern Spanish American Lit.	—	33-14 or 33-16	4	0	8	4
33-26	Modern Spanish American Lit.	—	33-25	4	0	8	4
33-31	Adv. Comp. & Conversation	—	{ 33-22 33-24 or 33-26	4	0	8	4
33-32	Adv. Comp. & Conversation	—	33-31	4	0	8	4

*Summer term — 5 weeks.

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NORTHEASTERN UNIVERSITY

Department of Admissions

360 HUNTINGTON AVENUE

BOSTON 15, MASS.

OFFICE HOURS

DEPARTMENT OF ADMISSIONS

9 A.M. to 4 P.M.

daily

Saturday 12.00

Noon

Wednesday Eve-
nings by Appointment

APPLICATION FOR ADMISSION

(A nonreturnable fee of five dollars must accompany this application.

Make checks, money orders, or drafts payable to
Northeastern University)

To Director of Admissions:

I ^{Mr.}
^{Miss}.....
Print First Middle Last Name

hereby apply for admission to the College of.....

.....for the school year beginning.....

I expect to major in.....Veteran:.....
Yes or No

NOTE: The applicant should fill out the following form
(both sides) with care.

Address.....

.....Tel.....

Date of Birth.....Age.....

Are you a citizen of the United States?

Graduate of.....High School, Year.....

Location of High School.....

Name of Principal.....

Name and address of other high schools you have attended.....

.....

Names of Principals.....

.....

If not a graduate, state the years of attendance and why you left.....

.....

Father's, mother's, or guardian's name and address

.....

.....

Father's work, business or profession.....

.....

Names and addresses of two persons to whom we may direct inquiries
concerning you.

.....

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Weight.....Height.....

Have you any physical infirmities? Explain, if any.....

Defects of speech.....

Defects of hearing.....

Defects of sight.....

Bodily infirmities.....

Is your general health good, fair, or poor?.....

Have you done collegiate work elsewhere?.....

If so, name and address of college or university.....

Applicant must request the college or university which he has attended to send official transcripts of his records direct to the Director of Admissions, Northeastern University.

Do you expect advanced credit for past collegiate work?.....

List all athletics and other extracurricular high school activities you have engaged in.....

Names and addresses of all past employers with brief description of each job, length of employment, and wages received:.....

Declaration of Parent or Guardian

This application has been read by me and has my approval.

.....
Signature of Parent or Guardian

NORTHEASTERN UNIVERSITY

(COEDUCATIONAL)

*COLLEGE OF LIBERAL ARTS

Offers a broad program of subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities are available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

*COLLEGE OF ENGINEERING

Offers curricula in Civil, Mechanical, Electrical, Chemical, and Industrial Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

*COLLEGE OF BUSINESS ADMINISTRATION

Offers curricula in Accounting, Industrial Relations, Marketing and Advertising, Finance and Insurance, and Business Management. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

SCHOOL OF LAW

Offers day and evening undergraduate programs. Admits those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent. Degree: Bachelor of Laws. Also offers a graduate program leading to the degree of Master of Laws.

SCHOOL OF BUSINESS

Offers curricula through evening classes in Accounting, Business Management, Industrial Management, Marketing, Law and Business, Engineering and Management. Conducts certificate programs in the Labor Relations Institute, Institute of Retailing, Office Management Institute, Institute of Insurance, and the Traffic Management Institute. Arranges intensive programs of one or more courses to serve special needs. Degree: Bachelor of Business Administration with appropriate specification.

EVENING COLLEGE OF LIBERAL ARTS

Offers courses in the fields of Economics, English, History, Government, Philosophy, Psychology, and Sociology; the program is equivalent in hours to one-half the requirement for the bachelor's degree, and prepares for the study of law and further study in Liberal Arts; special courses may be arranged. Degrees: Associate in Arts and Associate in Social Sciences.

*The Co-operative Plan

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the freshman year students alternate periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for preprofessional students who do not desire the Co-operative Plan.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

BOSTON, MASSACHUSETTS

School of Law

47 MT. VERNON STREET

Other Schools

Telephone: KENMORE 6-5800

360 HUNTINGTON AVENUE



NORTHEASTERN UNIVERSITY

School of Law



1950 - 1951

Fifty-Third Year

NORTHEASTERN UNIVERSITY

School of Law

47 MT. VERNON STREET, BOSTON 8, MASSACHUSETTS

Telephone: KEnmore 6-5800

LOWELL S. NICHOLSON, *Dean*

Gifts and Bequests

Northeastern University will welcome gifts and bequests for the following purposes:

- (a) For its building program.
- (b) For general endowment.
- (c) For specific purposes which may especially appeal to the donor.

It is suggested that, when possible, those contemplating gifts or bequests confer with the President of the University regarding the University's needs before legal papers are drawn.

Gifts and bequests should be made only in the University's legal name, which is "Northeastern University."

NORTHEASTERN UNIVERSITY

School of Law



DAY, EVENING *and* GRADUATE PROGRAMS
CO-EDUCATIONAL

1950-1951

BOSTON 8, MASSACHUSETTS

April, 1950

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CALENDAR

April, 1950 — September, 1951

1950

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ACADEMIC CALENDAR OF THE SCHOOL OF LAW

September, 1950 — September, 1951

Fall Term, 1950

September 11-12	Monday and Tuesday	Registration.
September 13	Wednesday	Classes begin.
October 12	Thursday	Columbus Day.
November 23-24	Thursday and Friday	Thanksgiving recess.
December 23	Saturday	Christmas recess begins.

1951

January 2	Tuesday	Classes resume.
January 22-26		Upperclass examinations.
January 26	Friday	Fall Term closes.

Spring Term, 1951

January 29	Monday	Classes begin.
February 22	Thursday	Washington's Birthday.
April 19	Thursday	Patriots' Day.
May 21	Monday	Senior examinations begin.
May 28	Monday	Second-year examinations begin.
June 4	Monday	Freshmen examinations begin.
June 15	Friday	Spring term closes.

Fall Term, 1951

September 10-11	Monday and Tuesday	Registration.
September 12	Wednesday	Classes begin.

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Stenographer

VIOLA G. NICOSIA
Stenographer

GENERAL INFORMATION

The University

Northeastern University is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree-granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in which the control of the institution is vested.

Founded in 1898, Northeastern University, from the outset, has had as its dominant purposes the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the progress of other institutions but has sought to bring education more directly into the service of human needs.

With respect to program, Northeastern University has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated.
- To effective teaching.
- To advising and guiding students.
- To giving students the chance to build well-rounded personalities through a balanced program of extracurricular activities.

The Northeastern Plan of Education in the undergraduate schools is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day.
- Adult Education by Night.

So far as the New England States are concerned, Northeastern University is the only institution whose day colleges, other than the School of Law, are operated under the Co-operative Plan whereby throughout the school year the upperclass students alternate ten-week periods at school with ten-week periods upon jobs in business and industry.

The several schools and programs of the University are conducted either under the name "Northeastern University" or by its affiliated schools — The Lincoln Schools and The Huntington Day School for Boys.

The School of Law

Northeastern University School of Law, the first of the several schools and colleges of Northeastern University, was established in 1898. Among its original incorporators were Judge James A. Dunbar, James Barr Ames, then Dean of the Harvard Law School, and Samuel Bennett, at that time Dean of the Boston University School of Law. Later, such men as Ezra Thayer, Dean of the Harvard Law School, Samuel Elder and Robert G. Dodge have been active in shaping the policies of the School and aiding in its development.

Northeastern University School of Law is now entering upon its fifty-third year of instructing and preparing young men and women for the practice of law. Graduates of the School to the number of more than two thousand have become active practicing lawyers in Massachusetts and in the northeastern area of the United States, and many of them have been honored by appointment to the bench and to other positions of public trust and confidence. Upwards of another thousand graduates have used their law training to advance themselves as leaders in the business and industry of the nation.

The purpose of the School of Law is to prepare men and women for the active practice of the profession throughout the common law jurisdictions, more particularly in Massachusetts and the other New England States, and to provide legal training for those who are ambitious to advance themselves in business. The success of the School in achieving this purpose has been due in no small measure to the faculty members who throughout the years have taught at the School of Law. In addition to the full-time teachers, outstanding leaders in the profession and noted specialists in particular fields of the law give special lectures and many of the courses. The School in this manner relates the work of the classroom to the active practice of the profession.

Accreditation

Northeastern University School of Law meets the requirements of the Section of Legal Education and Admissions to the Bar of the American Bar Association and is on the list of approved schools of that body.

The School is a member of the Association of American Law Schools, and it is also registered as an approved school by the Board of Regents of the University of the State of New York.

Location

The School of Law is located at 47 Mt. Vernon Street, on the top of historic Beacon Hill, in Boston. This location has many advantages for

law students. The State House is within two minutes' walk, thus affording ample opportunity to students to observe legislative processes.

Within four minutes' walk is the Suffolk County Court House. Here the students can observe the workings of the judicial processes in every aspect, for here are argued over ninety per cent of the cases heard by the Supreme Judicial Court. In the same Court House there are usually eight or ten jury sessions of the Superior Court conducting both civil and criminal trials. This court also holds equity sessions throughout the year. In addition the Suffolk County Court House houses the Probate Court and the Municipal Court of the City of Boston, both of which handle a very large volume of business. The Land Court which administers the Torrens system of land registration holds its sessions here.

A few blocks farther away is the Federal Court House where are held the sittings of the United States District Court for the District of Massachusetts and the Court of Appeals for the First Circuit.

The School is readily accessible from all parts of metropolitan Boston, being within a few minutes' walk of the Park Street subway station which is the focal point of all rapid-transit and street-car lines serving an area containing two million people.

The School of Law building provides well-equipped classrooms, an ample Library, conference rooms, and offices for instructors and the administrative staff.

Library

The Law School Library contains more than 20,000 volumes and is steadily growing. It is so arranged as to give the student direct access to the books in the stacks as well as in the reading room. The Library contains many of the State reports, the complete National Reporter System, the reports of the Supreme Court of the United States, the Federal Reports, the English reports, Dominion Law Reports, English and American digests, various State digests and statutes, and an extensive collection of encyclopedias, annotations, treatises, legal periodicals, approved textbooks, and all current casebooks. The Library complies in all respects with the requirements of the various accrediting bodies. In addition there is housed in the State House, within two minutes of the School, the State Library, containing some six hundred thousand volumes, which is available to students of the School. In the Federal Court House there is also available to students the Library of the United States Court of Appeals.

ADMISSION OF STUDENTS

Requirements for Admission

A. Candidates for the Degree of Bachelor of Laws (LL.B.):

Men and women eighteen years of age or over who have satisfactorily completed at least one half of the work required for an acceptable college degree at an accredited college and have attained records therein which meet the standards set by the Committee on Administration will be admitted as candidates for this degree.

A student transferring from any law school which is approved by the American Bar Association or is a member of the Association of American Law Schools and who has maintained a satisfactory academic record may be admitted to advanced standing on such terms and conditions as the Committee on Administration may prescribe. Transcripts showing both college and law school work must be submitted with the application. Successful completion in residence of at least one full academic year of study is required for the degree.

B. Special Students:

A limited number of applicants, who are at least twenty-three years of age and who cannot qualify under the foregoing requirements for admission as candidates for the degree of Bachelor of Laws, but who are eligible to take the bar examination in their own state, may, in exceptional cases and at the discretion of the Committee on Administration, be admitted as special students. Applicants for admission as special students must give evidence of such general education and experience as will enable them to carry on and profit by the work of the School.

C. Candidates for the Degree of Master of Laws (LL.M.):

Men and women who have been admitted to the bar or who have obtained the degree of Bachelor of Laws or an equivalent degree from an approved law school may, at the discretion of the Committee on Administration, be admitted to the Master's course as candidates for the degree of Master of Laws, or they may be admitted as special students and enroll in individual courses as desired.

Readmission

Former students are readmitted only at the discretion of the Committee on Administration and must upon their return to the School meet the degree requirements in force at the time of their re-entry. The Committee on Administration reserves the right to refuse admission or re-admission to any applicant.

Application for Admission

Entering students in the undergraduate divisions may enroll only in the fall of each year. Applicants for the Graduate Division may be admitted at the beginning of any term. Application for admission should be made as early as possible *before the beginning* of the term.

Candidates for admission to the School of Law should observe the following procedure:

1. The candidate should obtain from the office of the School of Law, 47 Mt. Vernon Street, Boston 8, Massachusetts, an application form which shall be filled out completely and returned to that office accompanied by an application fee of five dollars. Checks and money orders should be made payable to Northeastern University.

2. The application for admission shall be accompanied or followed by an official transcript of the applicant's academic record at each college and professional school which he has attended prior to making such application.

3. The applicant must also submit at least two letters addressed to the Dean by persons not members of applicant's family testifying to the applicant's intelligence, industry, and good character. It is helpful to include a letter from the dean or some teacher of his school or college.

4. Upon receipt by the applicant of notice of the acceptance of his application, he shall register in person at the School of Law during or before the registration period indicated in this catalog. A fee of two dollars will be charged for late registration.

5. The Committee on Administration reserves the right to refuse admission to any applicant.

Registration

Every student, whether an entering student or an upperclassman, is required to register in person before the opening of each term and at that time to arrange for the payment of tuition. *The filing of an application does not constitute registration.*

Pre-Legal Program

Students desiring to study law but who have not completed at least one half the work required for a Bachelor's degree in an accredited college should write to or consult the Director of Admissions for Northeastern University, whose office is located in Richards Hall, 360 Huntington Avenue, Boston 15.

The College of Liberal Arts of Northeastern University conducts both day and evening pre-legal programs which prepare adequately for admission to the School of Law.

The Faculty of the School of Law does not require that applicants for admission shall have pursued any specific course of study, or completed any prescribed subjects. The intending law student is urged, however, to lay especial emphasis on studies in English and English composition; in history, particularly the history of English and American governments and institutions; and in the social sciences. The practice of law covers a field so wide and the needs of the individual students vary so greatly that it is impossible to prescribe any rigid undergraduate program which should be pursued by a student intending to study law. Any academic work thoroughly done will be of service.

Tuition and Fees

The following schedule of tuition charges is effective beginning with the Fall Term, September, 1950.

APPLICATION FEE \$5.00

Each student is required to pay an application fee when he first enters the University. It is payable but once and is not refundable.

TUITION CHARGE FOR ALL STUDENTS 16.00

This charge for tuition shall be applicable to all students, whether regular, special, or unclassified, and irrespective of whether they are enrolled in the Day Division, Evening Division, or Graduate Division, or any combination thereof. per semester hour

The minimum tuition charge for any student shall be \$45 a semester.

The tuition charge for each term is payable in two equal instalments which are due on the following dates:

Fall Term, 1950

First tuition instalment due September 13, 1950

Second tuition instalment due November 13, 1950

Spring Term, 1951

First tuition instalment due February 5, 1951

Second tuition instalment due April 9, 1951

Fall Term, 1951

First tuition instalment due September 12, 1951

Second tuition instalment due November 12, 1951

MASTER'S THESIS FEE 40.00

The thesis fee for a graduate student is \$40 payable upon approval of the student's thesis topic.

SPECIAL EXAMINATION FEE 10.00

POSTPONED EXAMINATION FEE 5.00

LIBRARY FEE (*each semester*) 5.00

LATE REGISTRATION FEE.....	\$2.00
A late registration fee is charged to students who register in courses for credit after the close of the first week of any term.	
DEFERRED PAYMENT FEE.....	2.00
The deferred payment fee will be added to all bills which are not paid when due. Failure to make the required payments on time, or to arrange for such payments, is considered sufficient cause to bar the student from classes until the matter has been adjusted with the Dean.	
GRADUATION FEE.....	15.00
This fee is payable thirty days before the student is to be recommended for the degree.	

Scholarships and Prizes

Faculty Scholarships. The University has made available five cash scholarships of \$100 each in honor of former distinguished members of the Faculty of the School of Law: Arthur A. Ballantine, Esquire, of the firm of Root, Ballantine, Harlan, Bushby & Palmer, New York; the late Elias Field, Esquire, formerly of the firm of Brown, Field, McCarthy & Field, Boston; Honorable Hugh D. McLellan, formerly Justice of the District Court of the United States for the District of Massachusetts, now of the firm of Herrick, Smith, Donald, Farley & Ketchum, Boston; Oscar Storer, Esquire, of the firm of Storer & Lucas, Boston; and Honorable John V. Spalding, Associate Justice of the Supreme Judicial Court of Massachusetts. These scholarships are awarded to second year students on the basis of their academic record during the first year and promise of future success.

Honor Scholarships. A \$50 scholarship is awarded annually to the member of the third year class in the Day Division and to the member of each of the third and fourth year classes in the Evening Division who received the highest scholastic average in his class for the preceding academic year. Two \$25 scholarships are awarded annually to the two members of the third year class in the Day Division and to the two members of each of the third and fourth year classes in the Evening Division ranking next in honor to the students receiving the \$50 awards.

The *Faculty Scholarships* and the *Honor Scholarships* are awarded in October or November of each year and only to a student who has enrolled for his next year of study. In the event a student has not enrolled for the ensuing year, the next highest ranking student will receive the award. Scholarship awards are made only to students who have attained a weighted average of 80% or better.

Daniel F. Dowd Scholarship. This scholarship, in the principal sum of \$1,000, is the gift of a friend of the Law School in memory of a worthy citizen of the State of Vermont. The income from this fund is available to provide a scholarship or prize for such worthy and needy student as the Dean of the School of Law shall select, preference being given to (1) residents of Windsor County, Vermont, (2) residents of the State of Vermont, and (3) other students.

Law Week Award. The editors of *The United States Law Week* have established an award, consisting of a year's free subscription to *Law Week*, for that member of the graduating class of Northeastern University School of Law who is adjudged by the Faculty to have made the most satisfactory progress during his final School year.

Honor Awards, 1949

Faculty Scholarships:

ARTHUR A. BARTON	ROBERT E. MEYER
EDWARD J. DUFFY, JR.	JAMES E. MROSE
	KATHERINE S. STONE

Honor Scholarships:

IRVING BACKMAN	HUGO A. OLORE, JR.
DEAN W. CARLETON	JORDAN PEARLSON
SETRAK K. DERDERIAN	ROBERT R. RICH, JR.
FRANCIS LEONE	ROBERT D. SANBORN
BERNARD L. NUSSINOW	GRAFTON H. WILLEY, III

Law Club Awards (for excellence of briefs):

HARRY L. BARRETT	JAMES E. MROSE
EDWARD J. DUFFY, JR.	GEORGE PAPAZOGLU
	W. MELVIN PRIFTI

Final Law Club Argument (April 5, 1950):

Lummus Club, represented by	
NELSON SHECHTEL	ALPHONSE SAN CLEMENTE
Gray Club, represented by	
W. MELVIN PRIFTI	NEWTON LOCKE
<i>Won by the Lummus Club</i>	

National Law Club Competition (New York, December 1949)

Winners of "Best Brief" Award:

IRVING BACKMAN	HUGO A. OLORE, JR.
	JORDAN PEARLSON

Law Week Award:

FRANCIS R. DOBROWSKI

EDUCATIONAL PROGRAMS

Day Division

The completion of the course of study leading to the degree of Bachelor of Laws in the day curriculum requires that students shall be in regular attendance for three full academic years and that they shall devote substantially all of their working hours to their law studies. A minimum of seventy-six semester hours of academic credit is required for graduation.

Evening Division

The evening Law School course leading to the degree of Bachelor of Laws covers a period of four school years and is equivalent in content and the number of classroom hours to the day program. At the option of the student the evening Law School program may be spread over a period of five years. The evening program is intended primarily for those who are employed during the day.

Graduate Division

The program leading to the degree of Master of Laws can be completed in a period of from one to three years. It has been designed with the twofold purpose of enabling graduates of approved law schools to obtain the degree of Master of Laws, and also of affording active practitioners an opportunity for advanced study in order to enhance their professional effectiveness.

The requirements for admission to the *Graduate Division* are set forth on page 14, and the requirements for the Master of Laws degree appear on page 23 of this catalog. For further details, see the special *Graduate Division* folder which will be mailed on request.

Combined Programs

Students in the College of Liberal Arts and the College of Business Administration of Northeastern University in their senior year may elect courses in the School of Law in lieu of the regular senior programs of these colleges.

Upon satisfactory completion in the School of Law of the first year Day program, such students then become eligible for the degree of Bachelor of Arts or of Bachelor of Science according to the curriculum in which they have qualified. Upon the completion of their law studies in the School of Law, they also become eligible for the degree of Bachelor of Laws.

These combined programs shorten the time required to obtain both degrees and also the time required to qualify for admission to the practice.

Method of Instruction

The purpose of the School of Law is to develop an intelligent student into a person capable of handling the various legal problems which may be brought to him. This objective is accomplished by admitting only those students whose educational preparation indicates that they can become competent lawyers, either in the professional field or in their own businesses, and then by working with these students through four progressive steps:

(1) *The Case Method of Instruction* — The student is first taught to read and to use the written opinions of the appellate courts by which the final judgments in litigation are stated and decided and explained. The intensive study of these actual "cases" gives to each student the power to analyze facts and develops the process of legal reasoning which must be followed if new factual situations are to be handled with competence.

(2) *The Basic Principles of Law* — The student is also taught the important principles of law arising in the wide fields of contracts, torts, criminal law and other basic subjects. These fundamental principles of legal rights and remedies must be so learned that they become a part of every lawyer and can be brought into use as new situations are presented.

(3) *How to Find the Law* — The solution of many of the cases which come to a lawyer requires a building up from these basic principles learned in the law school, and this building up must be done through the lawyer's knowledge of *how to find* the law. Therefore the student is also taught to use the reports and digests and statutes and other books found in the law library.

(4) *Law Clubs and Legal Research* — The student finally must be told about and then given experimental practice in the way to handle clients, understand evidence, present his case in court, and to use the other procedures by which a competent lawyer protects his clients in their rights.

At Northeastern University School of Law the development of the student through these four steps is under the supervision of experienced law professors and of lecturers who have been selected from the active profession by reason of their successful practical experience and for their ability to pass their knowledge on to the students of the School of Law.

Legal Research

For the purpose of bringing the academic study of the law into closer relation to the needs of active practitioners, Northeastern University School of Law has established an enlarged and integrated program affording training in research and in the various kinds of legal composition.

A required course in the first semester of the first year introduces the student to legal bibliography and simple legal writing. Continuously throughout the curriculum the student is required to do drafting in connection with regular courses. Such drafting presupposes the necessary research. This continuous and integrated program of research and drafting is related to the subject matter of a variety of courses offered by different instructors.

An important part of this co-ordinated program is provided, in the course on *Moot Court*, by the law clubs which have been established in both the Day and Evening Divisions. Through the law clubs the students are given practical instruction and experience in the analysis of legal problems, in the use of legal materials, in the preparation and presentation of cases before the appellate courts, and in the written expression of legal arguments. The clubs, each of which is composed of eight to a dozen men from each class, start their work shortly after the beginning of the school year. The students first argue cases within their own clubs. Later a series of interclub contests is scheduled. The competitive program is concluded by final arguments between the successful clubs of the Day and Evening Divisions.

The program is concluded in the final year of the curriculum by a formal course in Legal Research. In this course the students are presented with current problems from the offices of active practitioners, and are trained in class upon the problems submitted by such lawyers, studying and analyzing the issues presented and preparing for such lawyers the customary "law office memorandum" in each case.

Faculty Advisors

The students are encouraged to take up their problems with the members of the full-time Faculty. These personal conferences, either on legal matters or other problems, can assist students in orienting themselves to the study of law and to the continuous and arduous efforts needed if the Law School work is to be completed successfully. For this purpose each student is assigned to a certain member of the full-time Faculty.

REGULATIONS OF THE SCHOOL OF LAW

General Policy

The School reserves the right, at any time, to make any changes which are deemed advisable in the number and content of courses, their order in the curriculum, the instructors assigned to courses, and in the rules, regulations and fees of the School.

Attendance at the School of Law is a privilege and not a right. The Committee on Administration reserves the right to require at any time the withdrawal of any student whom it may deem unworthy either on account of his neglect of study, his nonattendance at classes, his incapacity for the law, or for any grave defect of conduct or character, and no reason for requiring such withdrawal need be given.

Withdrawals

In the event any student is obliged to withdraw from the School for causes deemed adequate by the Committee on Administration, tuition may be refunded in accordance with the following schedule:

<i>Attendance</i>	<i>Refund</i>
Two Weeks	80 per cent
Three Weeks	60 per cent
Four Weeks	40 per cent
Five Weeks	20 per cent
Over Five Weeks	0 per cent

Attendance

Students are expected to attend with regularity the sessions of all courses in which they are enrolled. Students who are irregular in class attendance without justifiable cause may be dropped from the class rolls or be refused permission to take the final examinations in the course. No student during his attendance at the School of Law may be registered in any other school or college, whether of Northeastern University or of any other institution, without the consent of the Dean.

Marking and Promotion System

A student's scholastic standing is determined solely by his weighted average calculated upon the grades in all courses taken since entering the School, weighted in accordance with the semester hours devoted to each course. The quantitative unit in determining credits is the semester hour, which is equivalent to one hour in class each week for one semester.

The regulations regarding notebooks, examinations, methods of grading, promotion and graduation are set forth in detail in the special rules issued from time to time by the Faculty. A copy of these special printed rules and regulations can be obtained upon request to the Registrar.

Requirements for the Degrees

The degree of Bachelor of Laws will be conferred upon those candidates who are of good moral character and who

- (1) Have pursued in residence the study of law for the required period of time and have completed the program of study prescribed by the Faculty; and
- (2) Have passed examinations in at least seventy-six semester hours of courses and have attained a minimum weighted average of sixty-eight per cent.

In recognition of superior scholarship, the degree will be granted with special honors, as follows: *Cum Laude*, to students who have met all the requirements for the degree and have attained a weighted average of eighty-five per cent to ninety per cent; *Magna Cum Laude*, to students who have met all the requirements for the degree and have attained a weighted average of ninety per cent or better.

The degree of Master of Laws will be conferred upon those candidates who are of good moral character and who

- (1) Have completed not less than twenty-four semester hours of courses prescribed by the Committee on Administration, including the course on *Jurisprudence and Legal History*, and have attained a minimum weighted average of eighty per cent or better; and
- (2) Have presented a legal thesis, complying with the requirements stated below, written under the direction of and satisfactory to the Faculty; and
- (3) Have been recommended for the degree of MASTER OF LAWS by the Committee on Administration.

The thesis required of candidates for the degree of MASTER OF LAWS shall be based upon original research and upon a subject approved by the Faculty as one worthy of the graduate degree. The work required of the student in preparation of his thesis must be at least equivalent to the work required to obtain three semester hours of credit in a graduate course. Two typewritten copies, in final form, must be submitted not later than two months before the degree is to be awarded.

DAY CURRICULUM 1950-1951

First Year

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
Contracts	3	Contracts	2
Torts	2	Torts	3
Property	3	Property	3
Judicial Remedies	2	Judicial Remedies	2
Criminal Law	2	Agency and Partnership	3
Moot Court	$\frac{1}{2}$	Moot Court	$\frac{1}{2}$
	<u>12½</u>		<u>13½</u>

Second Year

Equity	2	Equity	2
Bills and Notes	2	Sales	2
Wills and Future Interests	2	Future Interests	2
Domestic Relations	2	Moot Court	$\frac{1}{2}$
Moot Court	$\frac{1}{2}$	Legal Research	1
Electives	4	Electives	5
	<u>12½</u>		<u>12½</u>

Third Year

Trusts	2	Trusts	2
Corporations	2	Corporations	2
Evidence	2	Evidence	2
Legal Research	1	Electives	6
Electives	6		
	<u>13</u>		<u>12</u>

Elective and Graduate Courses

Group A

Creditors' Rights	2	Security	3
Constitutional Law	2	Constitutional Law	2
Conflict of Laws	2	Conflict of Laws	2
Federal Taxation	2	Federal Taxation	2
Mass. and Trial Practice	2	Mass. and Trial Practice	2

Group B

Labor Law	3	Administrative Law	3
Probate Practice	2	Estate Planning	2
Tax Problems of Fiduciaries	2	Taxation of Corps. & Part.	2
Federal Jurisdiction	3	Corp. & Tax Accounting	3
Landlord and Tenant	1	World Law	2
Jurisprudence	2	Trade Regulations	2
Admiralty	2		

Group C

Insurance	2	Conveyancing	2
Patents	2	Federal Tax Procedure	2
State and Local Taxation	2	Seminar on Labor Law	2
Corporate Finance	2		

EVENING CURRICULUM 1950-1951

First Year

First Semester

Hours

Contracts	3
Torts	2
Property	3
Judicial Remedies	2
Moot Court	$\frac{1}{2}$

 10 $\frac{1}{2}$

Second Semester

Hours

Contracts	2
Torts	3
Property	3
Judicial Remedies	2
Moot Court	$\frac{1}{2}$

 10 $\frac{1}{2}$

Second Year

Criminal Law	2
Equity	2
Bills and Notes	2
Wills and Future Interests	2
Domestic Relations	2
Moot Court	$\frac{1}{2}$

 10 $\frac{1}{2}$

Agency and Partnership	3
Equity	2
Sales	2
Future Interests	2
Moot Court	$\frac{1}{2}$

 9 $\frac{1}{2}$

Third Year

Trusts	2
Corporations	2
Legal Research	1
Electives	4

 9

Trusts	2
Corporations	2
Electives	5

 9

Fourth Year

Evidence	2
Legal Research	1
Electives	6

 9

Evidence	2
Electives	6

 8

For descriptions of the course on *Legal Research*, see pages 20-21 and 30.

The evening curriculum includes the same elective courses as the day curriculum. See opposite page.

The elective and graduate courses in *Group A* and the courses in *Labor Law* and *Administrative Law* will be offered every year, with day and evening classes. The other courses in *Group B* and the courses in *Group C* will be offered in alternate years, with late afternoon or early evening classes. The courses in *Group B* will be offered in the academic year 1950-51.

The choice of elective courses must be approved by the student's Faculty Advisor.

DESCRIPTION OF COURSES

Administrative Law

Three semester hours

The constitutional problems involved in the creation of agencies to administer law. The method of statutory creation and the manner in which some of the more important of these agencies function. Rule making powers. Problems dealing with adequate notice and fair hearing (evidence and procedure, type of tribunal and necessity of findings). The nature and scope of control by courts over administrative determinations. Attention throughout the course will be directed to the Administrative Procedure Act and Massachusetts cases involving administrative agencies. Katz, *Cases on Administrative Law* (1947). Mr. Segal.

Admiralty and Maritime Law

Two semester hours

Federal and State jurisdiction. Jurisdiction over waters, craft, contracts, torts, and crimes. Maritime liens; and rights of maritime workers. Carriage of goods. Charter parties; salvage; general average; marine insurance; pilotage; towage; collision, and limitation of liability; pleading and procedure. Lord & Sprague, *Cases on Admiralty* (1939). Mr. Stinchfield.

Agency and Partnership

Three semester hours

Rights and liabilities arising out of the relation of *principal and agent* and *master and servant*. Creation, nature and characteristics of *partnership*. Seavey, *Cases on Agency* (1945). Professor Roitman.

Bills and Notes

Two semester hours

A consideration of the law of bills of exchange, promissory notes, and checks at common law and as codified in the Uniform Negotiable Instruments Law. The formal requisites of negotiability and the rights and liabilities of parties are treated in detail. Aigler, *Cases on Bills and Notes* (1947). Mr. Lee.

Conflict of Laws

Four semester hours

The law governing activities that have connections in more than one state. Domicil. The bases for jurisdiction. The conflict rules applicable to problems involving the enforcement of foreign judgments, contracts, torts, taxation, property, marriage and divorce, and the administration of estates; with emphasis upon constitutional limitations. Cheatham, Dowling, Goodrich and Griswold, *Cases and Materials on Conflict of Laws* (2d ed., 1941), and *Supplement*.

Constitutional Law

Four semester hours

Judicial function and technique in constitutional litigation. Separation and delegation of powers; intergovernmental immunities. Federal powers. Commerce clause as a limitation on state power. Due process of law, procedural and substantive; bill of rights; equal protection; privileges and immunities. The contract clause. Dowling, *Cases on Constitutional Law*, 3d ed., with 1949 Supplement. Professor O'Toole.

Contracts

Five semester hours

Rights and duties arising from promises. The study of the general transaction (contract) of which the promise is a part. Requisites for the creation of the contract-promise; performance and discharge of contracts; and the parties to the making, performance and enforcement of contracts. Methods and measures of judicial relief. Shepherd, *Cases on Contracts* (2d ed., 1946). Mr. Whalon.

Conveyancing*Two semester hours*

A course in practical conveyancing. Agreements for purchase. Evidence of title. Deeds. Mortgages. Assignments. Partial Releases. Extensions. Discharges and Foreclosures of Mortgages. The recording and registration of title systems. Swaim (editor), *Crocker's Notes on Common Forms* (6th ed., 1938). *Prerequisite:* A course or practical experience in the field of conveyancing. Mr. Swaim.

Corporate and Tax Accounting*Three semester hours*

The basic patterns of business, corporate and tax accounting. Accounting principles and procedures and statements. Cases in which accounting problems have been presented in court. Designed for students and lawyers with no previous accounting background. Amory, *Materials on Accounting* (1949). Finney, *General Accounting* (1947). Mr. Stuetzer.

Corporate Finance*Two semester hours*

A study of the law relating to the capitalization and the financial operations of corporations. Judicial and administrative requirements concerning valuation and accounting, corporate merger, consolidation, purchase and sale of assets, holding company relationships, recapitalizations, administration of surplus, and stockholder distributions.

Corporations*Four semester hours*

The formation, promotion, organization, management, and control of corporations, including the problems arising under common law and modern statutes concerning corporate powers and their distribution among shareholders, directors, officers and agents. The creation, maintenance and change of corporate capital. Dodd & Baker, *Cases on Business Associations* (1940). Ballantine on *Corporations* (1939). Mr. Loewenberg.

Creditors' Rights*Two semester hours*

Jurisdiction in bankruptcy; adjudication; administration; discharge. Emphasis is placed on fraudulent conveyances, preferences, claims of creditors, and discharge. Corporate Reorganizations, and Arrangements. Consideration is given to non-bankruptcy liquidations, including assignments for the benefit of creditors. Sturges, *Cases on Debtors' Estates* (1949). Mr. Lurie.

Criminal Law*Two semester hours*

A preliminary study of the administration of criminal justice, with special reference to characteristics of particular crimes and the general principles of liability to punishment. Harno, *Cases and Materials on Criminal Law* (1939). Mr. Lurie.

Domestic Relations*Two semester hours*

The law of husband and wife: the contract to marry; nature and requirements of marriage; relations between husband and wife; dissolution of marriage by annulment, divorce and judicial separation. The law of parent and child. Jacobs, *Cases on Domestic Relations* (1939) with *1947 Supplement*. Mr. Kingston.

Equity*Four semester hours*

Origin and history of the jurisdiction of the court of chancery. Nature, enforcement and effect of equitable decrees. A study of specific enforcement of

contracts, injunctions against tort and crime, and other forms of equitable relief. Chafee & Simpson, *Cases on Equity* (1946). Dr. Hadley.

Estate Planning

Two semester hours

Estate Planning, a new field of law, embraces the counseling of estate owners and the preparation of necessary legal instruments, to ensure the maximum enjoyment of property. Course includes lectures on estate-planning aspects of wills, trusts, insurance, and taxation (inheritance, estate, gift, and income). Wormser, *Theory and Practice of Estate Planning* (2d ed., 1948). Prentice-Hall, *Law Students' Tax Service*. Mr. Bowers.

Evidence

Four semester hours

Evidence in trials at common law and in equity. Remoteness and prejudice. Examination, competence, and privilege. Exclusionary rules. Introduction of writings. Parol evidence rule. Morgan and Maguire, *Cases and Materials on Evidence* (1942). Dean Crane.

Federal Jurisdiction

Three semester hours

Jurisdiction and procedure in federal courts; diversity of citizenship; and jurisdiction and amount. Removal jurisdiction and procedure. Concurrent jurisdiction of state and federal judicial systems. Substantive law applied in the federal courts. Procedure under the Federal Rules of Civil Procedure: venue, process, parties, joinder, pleadings, motions, and trials. Appellate jurisdiction and procedure in the Court of Appeals and the Supreme Court of the United States. McCormick and Chadbourne, *Cases on Federal Courts* (1946). Professor Roitman.

Federal Taxation

Four semester hours

The problems involved in the federal taxation of individuals and business associations. Special consideration will be given to the estate, gift and income taxes, and the manner in which they interrelate in the taxation of individuals, trusts and business associations. Study of the structure of the present Internal Revenue Code, regulations, and other administrative and judicial interpretations thereof. Procedure in the courts and before administrative officers. Griswold's *Cases and Materials on Federal Taxation* (1946) with 1948 Supplement. Commerce Clearing House, *Federal Taxation—Current Law and Practice*. Mr. Flower.

Federal Taxation of Corporations and Partnerships

Two semester hours

Taxation of corporations and partnerships under the Federal Income tax laws, including consideration of current corporate and partnership income tax problems such as capital readjustments, reorganizations, distributions to shareholders and partners. *Prerequisite:* The course in *Federal Taxation*, or its equivalent.

Federal Tax Procedure

Two semester hours

Organization of the Bureau of Internal Revenue, and practice before its administrative units. Returns, assessment, and collection of tax; Statute of Limitations; waivers; deficiency determinations; overpayments, overassessments, refunds; penalties. Criminal prosecution. Settlement negotiations; offers in compromise; closing agreements; transferee liability. Jurisdiction of federal

courts in tax litigation. Pleading and practice before the Tax Court. Suits for recovery and refund. Appellate review of decisions. *Prerequisite:* The course in *Federal Taxation*, or its equivalent. Mr. Duersten.

Future Interests (*See Wills and Future Interests*)

Insurance

Two semester hours

The concept of insurable interest in property, liability and life insurance. The important aspects of policy writing, including warranties, representation, concealment, and waiver. Regulation of the insurance business by government. Patterson, *Cases on Insurance* (2d ed., 1947). Professor O'Toole.

Judicial Remedies

Four semester hours

An introduction to the study of Anglo-American Law, with emphasis upon pleadings and procedure. The sources of American Law. The methods employed in using the materials of the profession. The forms of action. Pleadings. Trial and Adjudication. Appellate review. Judgments. Research exercises in case law and legal bibliography will be required. Scott & Simpson, *Cases on Judicial Remedies* (1946). Dean Crane.

Jurisprudence and Legal History

Two semester hours

Study and comparison of the world's developed systems of law. The machinery of justice, the social interests recognized and protected, salient geographical and other facts shaping law, and important theories as to the nature and purpose of law, in each legal system and in important periods thereof. Chief attention is given to the Anglo-American legal system. This course will be limited to Graduate students. Dr. Hadley.

Labor Law

Three semester hours

Problems relating to labor organizations and collective bargaining, including legal aspects of various forms of concerted activity such as strikes, picketing, and related activities. The labor injunction, including federal and state anti-injunction statutes. Administration and application of the Labor-Management Relations Act of 1947 and related statutes. Legal aspects of the collective labor agreement. The regulation of labor unions. Emphasis on recent cases and legislation. Gregory & Katz, *Cases and Materials on Labor Law* (1948). Professor Roitman.

Labor Law Seminar

Two semester hours

An advanced study of critical legal problems arising out of labor relations. Analysis and research into problems of collective bargaining, including the effect of typical contractual provisions, the operation of grievance procedures and arbitration provisions, and the impact of state and federal legislation on the relations between collective bargaining representatives. Each student will be required to prepare written papers and oral reports of specific practical problems. The seminar is only open to those students who have completed a basic course in labor law or who have been granted permission by the instructor because of some special qualification. Professor Roitman.

Landlord and Tenant

One semester hour

This course covers the landlord-tenant relationship in general and the legal situations which arise between the parties. The standard form of lease and all its

provisions will be covered. A substantial amount of drafting of leases will be required. Hall, *Massachusetts Law of Landlord and Tenant* (4th ed., 1949). Friedman, *Preparation of Leases*. Mr. Schwartz.

Legal Research

Four semester hours

This required four-hour course includes research, drafting and participation in the law club programs. The study and work are spread throughout the curriculum, but with special emphasis during four semesters. Classes are held only upon special assignment, usually about once each month. See pages 20-21 for detailed description of the course. Facility in legal drafting and in legal research, analysis, organization and composition must be demonstrated before credit for the course is earned. *Manual of Legal Research*. The Faculty.

Massachusetts and Trial Practice

Four semester hours

Divisions of courts in Massachusetts and jurisdiction of each. Venue. Commencement of actions; attachments; pleadings; discovery before trial: interrogatories and depositions; set-off and recoupment; costs: tender, offer of judgment, and notice to admit facts. Trial procedure; the application of pleadings to the trial; interrogation of witnesses; requests for rulings, and for instructions to jury; motions for directed verdict; motions for new trial. Appeals; exceptions; reports and reservations. Preparation of record for Supreme Judicial Court. Preparation and presentation of trial and appellate arguments. Judgment and execution. Equity practice and pleading in Massachusetts. Powers, *Cases on Trial and Appellate Procedure* (1948). Mottla, *Massachusetts Practice* (1948). Mr. Black.

Moot Court

Two semester hours

In the first two years of study all students are required to participate in four Law Club arguments. This is part of the required research program in the School of Law. For further description see Legal Research, above, and the description on pages 20 and 21 of this catalog. *Manual of Legal Research*. The Faculty.

Patents

Two semester hours

Substantive patent law. Property in unpatented inventions; property in patented inventions. The effect of the anti-trust laws; territorial limitations; notice of patent; sales, assignments and licenses of patent rights; patentability; infringement; reissues; disclaimers; and jurisdiction of courts in infringement, contract and declaratory judgment actions. Mr. Thompson.

Probate Practice

Two semester hours

A practical course in probate law and procedure, embracing the study of important statutes, court rules, decisions, and points of practice. Course includes lectures on inheritance and estate taxes and on probate accounting. *Annotated Laws of Massachusetts*, vol. 6. Mr. Bowers.

Property

Six semester hours

A consideration of the basic principles of property law, including a study of the concept of possession, the doctrines of title applied to bona fide purchases of personal and real property, the historical development of estates in land and methods of transferring them, rights and duties involved in the ownership of

land, landlord and tenant relationships, and the development of public control over land. Casner & Leach, *Cases on Property* (1948). Professor Cancian.

Sales *Two semester hours*

The transfer of interests in goods by agreement, with special reference to security interests of the seller, warranties, and remedies of the parties at common law and under the Uniform Sales Act. Bogert and Britton, *Cases on Sales* (1947). Professor Roitman.

Security *Three semester hours*

This course embraces the material traditionally taught in the course on *mortgages* (real property as security), and the basic principles of the law of *suretyship* (the third person as security). It also includes a survey of the additional devices employed in modern business practice involving the use of personal property as security: pledges, chattel mortgages, conditional sales, trust receipts, and assignments of accounts. Hanna, *Cases and Materials on Security* (2d ed., 1940). Mimeographed material. Mr. Holmes.

State and Local Taxation *Two semester hours*

The problems involved in state (especially Massachusetts) taxation of individuals, business associations, and property. Special consideration will be given to inheritance and income taxes, the taxation of corporations and business associations, and the system of taxation upon real estate and personal property. The correlation between the state taxes and corresponding federal taxes. Procedure before state officers and the Appellate Tax Board. Mr. Long.

Tax Problems of the Fiduciary *Two semester hours*

Income, estate and gift tax problems incident to the creation and administration of trusts and estates, including consideration of the new "marital deduction." *Prerequisite:* The course in *Federal Taxation*, or its equivalent.

Torts *Five semester hours*

Intentional injuries to the person, land, and chattels; conversion. Consent; privilege. Negligence; causation; risk. Contributory negligence. Liability without fault. Misrepresentation. Defamation. Malicious prosecution. Abuse of process. Interference with advantageous relations. Thurston & Seavey, *Cases on Torts* (1942) with *1945 Supplement on Conversion*. Professor O'Toole.

Trade Regulations *Two semester hours*

The significant developments, common law and statutory, in the formulation of national policy with respect to the regulation of business, with detailed consideration of the Sherman Act, the Clayton Act, the Robinson-Patman Act and the Federal Trade Commission Act, with emphasis on State developments. Handler, *Cases on Trade Regulations* (1937) with *1947 Supplement*. Mr. Segal.

Trusts *Four semester hours*

The creation, administration, and termination of trusts. The rights and liabilities of parties with respect to express, resulting, and constructive trusts. Scott, *Cases on Trusts* (3d ed., 1940). Dean Nicholson.

Wills and Future Interests *Four semester hours*

In this course the student studies gift transactions, both *inter vivos* and testamentary. Most of the first semester deals with wills, including intestate suc-

cession; execution, revocation, and contest; rights of surviving spouse; mistake and related problems; ademption, satisfaction, advancements, and lapse; with some emphasis upon probate and problems of administration. The balance of the course deals with future interests in real and personal property, with the main emphasis upon types of estates, construction of limitations, gifts to classes, powers of appointment, taxation, and the rule against perpetuities. Leach, *Cases on Wills* (1947) with *1948 Tax Supplement*. Leach, *Cases on Future Interests* (2d ed., 1940) with *1948 Tax Supplement*. Professor Cancian.

World Organization and International Law

Two semester hours

The course will take up international law as now understood and applied, also some of the historical and philosophical backgrounds of international law, jurisprudence and other factors affecting international law, the development of international and world law, including the Nuremburg trials, previous and present attempts and efforts at world government, jurisprudence, philosophy and geopolitics as they affect world organization. The purpose of the course is primarily to direct thought to the future development rather than to past precedent in the fields of international law, world law and world organization. Mr. Mahony.

Degrees Conferred in June, 1949

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Aquinas College	1	Northeastern University	145
Bates College	4	Northwestern University	2
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Boston University	39	Ohio Northern University	1
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Chicago, University of	1	Providence College	7
Clark University	2	Purdue University	1
Colgate University	2	Rensselaer Polytechnic College	2
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Colorado, University of	1	Richmond, University of	1
Columbia University	1	Ricker Junior College	1
Connecticut, University of	4	Rochester, University of	1
Connecticut Junior College	2	Salem Teachers College	2
Cumberland College	2	Sampson College	1
Cornell University	1	Syracuse University	2
Dartmouth College	4	Simmons College	3
Duquesne University	1	Springfield College	3
Emmanuel College	1	St. Anselm's College	4
Fordham University	3	St. Michael's College	1
Georgetown University	2	Texas, University of	1
George Washington University	1	Temple University	1
Harvard University	33	Trinity College	1
Hawaii University	1	Tufts College	17
Holy Cross College	15	Union College	1
Howard University	1	United States Naval Academy	4
Illinois, University of	1	Vermont, University of	3
Indiana, University of	1	Vermont Junior College	1
Iowa Wesleyan	1	Virginia, University of	2
Kent State University	1	Washington State College	1
Kentucky, University of	1	Wayne University	1
Lehigh University	1	Wheaton College	1
Maine, University of	6	Wittenburg College	1
Maryland, University of	1	Williams College	4
Mass. Institute of Technology	6	Wisconsin, University of	2
Massachusetts, University of	8	Worcester Junior College	11
Miami, University of	5	Yale University	4
Michigan, University of	2		—
Minnesota, University of	1		496
Missouri, University of	1	<i>Less duplication</i>	97
Mt. Holyoke College	1		—
Nebraska, University of	1		399
New Hampshire, University of	9	<i>Plus others</i>	82
New Mexico, University of	1		—
New York University	1	<i>Total number of students</i>	481

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Offers a broad program of subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities are available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

*College of Engineering

Offers curricula in Civil, Mechanical, Electrical, Chemical, and Industrial Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

*College of Business Administration

Offers curricula in Accounting, Industrial Relations, Marketing and Advertising, Finance and Insurance, and Business Management. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

School of Law

Offers day and evening undergraduate programs. Admits those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent. Degree: Bachelor of Laws. Also offers a graduate program leading to the degree of Master of Laws.

School of Business

Offers curricula through evening classes in Accounting, Business Management, Industrial Management, Marketing, Law and Business, Engineering and Management. Conducts certificate programs in the Labor Relations Institute, Institute of Retailing, Office Management Institute, Institute of Insurance, and the Traffic Management Institute. Arranges intensive programs of one or more courses to serve special needs. Degree: Bachelor of Business Administration with appropriate specification.

Evening College of Liberal Arts

Offers courses in the fields of Economics, English, History, Government, Philosophy, Psychology, and Sociology; the program is equivalent in hours to one-half the requirement for the bachelor's degree, and prepares for the study of law and further study in Liberal Arts; special courses may be arranged. Degree: Associate in Arts.

*The Co-operative Plan

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the freshman year students alternate periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for pre-professional students who do not desire the Co-operative Plan.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

Boston 15, Massachusetts

School of Law
47 MT. VERNON ST.

Telephone: KENMORE 6-5800

Other Schools
360 HUNTINGTON AVENUE



NORTHEASTERN UNIVERSITY
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1950-51

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Monday through Friday 8:45 A.M.—9:00 P.M.

Saturday 8:45 A.M.—12:00 NOON

The office is closed on all legal holidays.

Interviews

Prospective students, or those desiring advice or guidance regarding any part of the school work or curricula, are encouraged to arrange for personal interviews with the Dean or other officers of instruction. Career planning through competent guidance provides an understanding of professional requirements and develops that definiteness of purpose so vital to success.

Gifts and Bequests

Northeastern University will welcome gifts and bequests for the following purposes:

- (a) For its building program.
- (b) For general endowment.
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It is suggested that, when possible, those contemplating gifts or bequests confer with the President of the University regarding the University's needs before legal papers are drawn.

Gifts and bequests should be made only in the University's legal name, which is "Northeastern University."

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1950

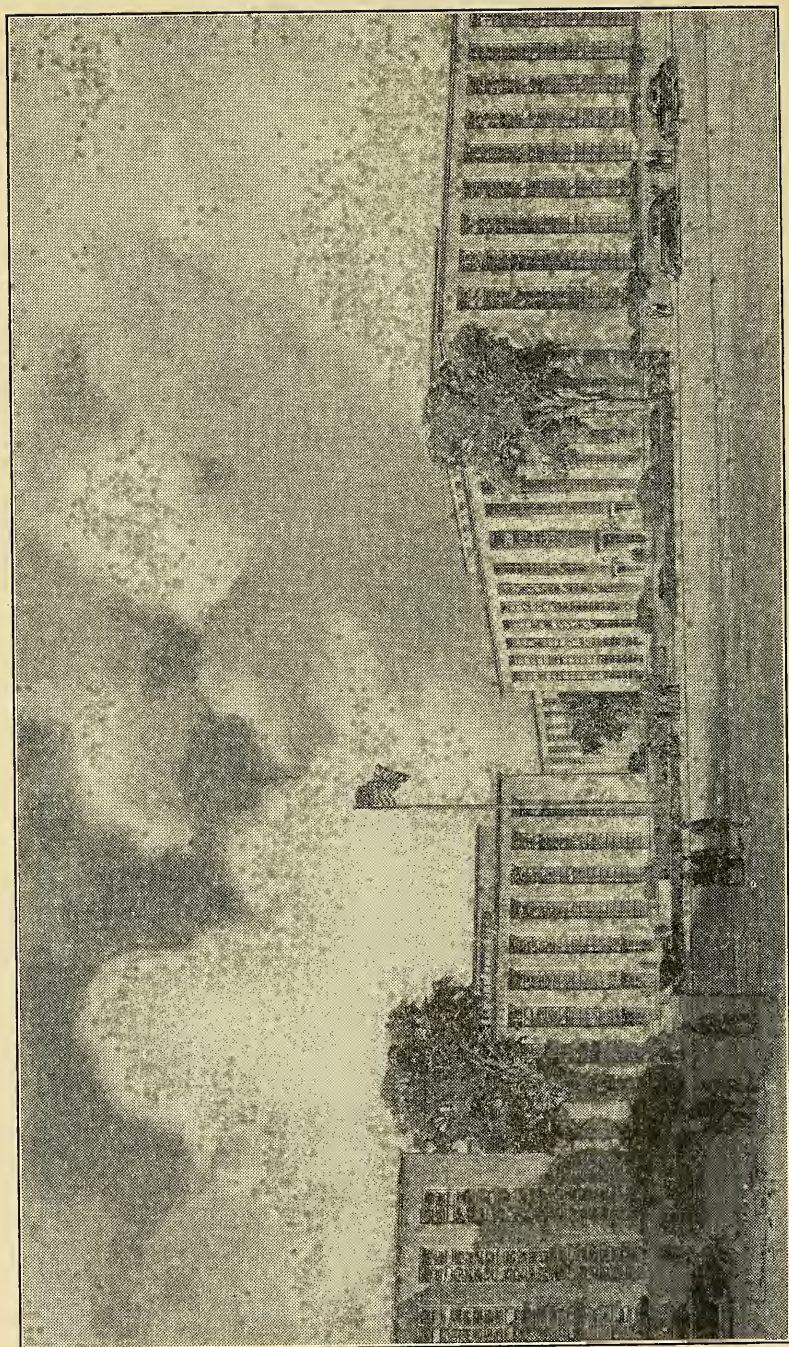
First semester classes begin	September 13
Legal Holiday—No class sessions	October 12
Week for first term tests	October 30
Legal Holiday—No class sessions	November 11
Legal Holiday—No class sessions	November 23
Week for second term tests	December 11
Final class session before Christmas recess	December 21

1951

First class session after Christmas recess	January 2
Final Examinations, first semester	January 22-27
Second Semester classes begin	January 29
Legal Holiday—No class sessions	February 22
Week of first term tests	March 5
Legal Holiday—No class sessions	April 19
Week of second term tests	April 23
Legal Holiday—No class sessions	May 30
Final Examinations, second semester	May 21-26
Summer Term begins	May 28

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 Assistant Co-ordinator, Planning and Methods, New England Mutual Insurance Company
- THOMAS COOPER, JR.
Public Speaking, Conference Leadership, Supervisory Training
 Northeastern University
- LOUIS COOPERSTEIN, A.B., A.M., Harvard University
Business English
 Northeastern University
- LESTER S. CRAMER, A.B., Harvard University
Business Economics
 President, Cramer Research, Inc.
- ANTHONY J. CUCCHIARA, Massachusetts Advertising School
Principles of Advertising, Problems of Advertising
 President, Copley Advertising Agency
- FRANK M. CUSHMAN, B.S., M.B.A., University of Pennsylvania
Traffic Management
 Traffic and Industrial Consultant
- W. DAVID CROCKETT, B.L.I., Emerson College
Public Speaking
 Emerson College
- LAURENCE STROUT DAY, Ph.B., Brown University
Credits
 Credit Manager, W. F. Schrafft and Sons Corporation
- MARTIN W. DONOVAN, A.B., Northeastern University; Ed.M., Boston University
Business English
 Northeastern University
- JAMES T. DUNPHY, Bentley School of Accounting
Cost Accounting
 General Office Manager, Milk Division, H. P. Hood and Sons, Inc.
- FRANK EARLY, Morey School of Display and Design
Merchandise Display Techniques
 Display Manager, Gilchrist Company
- STANLEY MURRAY EPSTEIN, A.B., LL.B., Harvard University
Business Law
 Attorney at Law
- ANGELO JOHN FIUMARA, LL.B., Boston College Law School
Contracts
 Attorney at Law
- WILLIAM HUGHART FLETCHER, A.B., DePauw University; M.B.A., Northwestern University
Accounting Problems, Mathematics of Accounting
- GEORGE HUTCHINSON FOLEY, A.B., LL.B., Harvard University
Labor Legislation II
 New England Regional Attorney, United States Department of Labor
- CURTIS ROY GANONG, B.S., Northeastern University
Production Planning and Control
 Industrial Engineer, Sylvania Electric Products Company
- WARREN LINCOLN GANONG, S.B., Northeastern University
Time Study
 Training Advisor, H. P. Hood and Sons, Inc.
- JOHN A. GEARY, B.S.Ed., Massachusetts Teachers College
Industrial Safety
 Supervisor of Training, Engineering Department, Employers Liability Assurance Corporation
- JOSEPH M. GOLEMME, B.S., Northeastern University; M.A., Boston University
Accounting for Management
 Northeastern University

- HOWARD FRANCIS GREENE, Northwestern University; C.P.A.
Advanced Accounting Problems, C.P.A. Problems, Executive Accounting
Public Accountant
- THOMAS J. GRIFFIN, B.A.O., M.A.O., D.A.O., Staley College
Public Speaking
Griffin Studio of Speech
- WALTER BRADFORD GROVER
Advertising Principles
Advertising and Merchandising Consultant
- DANA P. HARDY, Oxford School of Business Administration
Life Insurance
Training Supervisor, John Hancock Mutual Life Insurance Company
- FREDERICK W. HARRISON, B.A., University of Maine; Ph.D., New York University
Financial Organization
Babson Institute
- GILMAN CLIFTON HARVEY, Massachusetts Teachers College; Bentley School of Accounting and Finance; C.P.A.
Accounting Aids to Management
Comptroller, Hawkbridge Brothers Company
Assistant Treasurer, Alcoma Association, Inc., Alcoma Packing Company, Inc., Acra-Cast, Inc.
- GEORGE R. HAYES, B.B.A., Boston University
Forms Design and Control
Thomas Groom and Company
- HUGH HEALEY, S.B., Massachusetts Institute of Technology
Work Simplification
Industrial Engineer, William Filene's Sons Company
- THOMAS CARROLL HEFFERNAN, A.B., A.M., Boston College; LL.B., Northeastern University
Business English
Administrative Assistant, Boston School Department; formerly Master, English Department, Boston English High School
- CARL W. HELLER, Babson Institute
Principles of Selling
Sales Manager, G. L. Fisher and Company
- ROBERT E. HORGAN, Bentley School of Accounting and Finance
Income Tax Procedure
Tax Accountant, White & Hodges
- J. KEENE HORNER, B.A., University of Oklahoma; M.B.A., Harvard University
Financial Organization, Principles of Investments, Security Analysis, Business Readings Counsellor
Dean of the Faculty, Director of Division of Finance, Babson Institute
- RAY A. HOWARD, A.B., Indiana University; M.B.A., Northwestern University
Accounting Problems
- GEORGE W. HOWE, A.B., M.B.A., Harvard University
Management Problems and Policies
Boston University
- GEORGE J. HUBERMAN, A.B., Harvard University
Retail Store Merchandising
Buyer, William Filene's Sons Company
- ARTHUR V. IRWIN
Rates and Tariffs
Rate Agent, Interstate Commerce Commission
- MELVIN C. JACK, B.S., M.S., University of Massachusetts
Accounting for Management
Head of Commercial Department, Quincy High School
- STANLEY MARTIN JACKS, A.B., Harvard University; LL.B., Northeastern University
Labor-Management Relations
Massachusetts Institute of Technology
- JOHN H. JUDGE, B.B.A., M.Ed., Boston University
Psychology
Executive Director, Beaverbrook Academy

- LYMAN A. KEITH, B.S., Northeastern University; M.A., M.B.A., Boston University
Accounting for Management
 Northeastern University
- HAROLD KERN, A.B., University of Newark; M.B.A., New York University
Office Organization and Administration
 Comptroller, National Pneumatic Company, Inc.
- WILLIAM J. KIRBY, A.B., Boston College; M.B.A., Harvard University
Retail Credit
 Credit Manager, Gilchrist Company
- HENRY AUGUST KRIEBEL, B.S., M.A., Lehigh University
Accounting Aids to Management
 Babson Institute
- WILLIAM BRYANT LAMPREY, LL.B., Suffolk University; C.P.A.
Accounting Problems
 Public Accountant and Attorney at Law
- ARTHUR J. LEBLANC, B.S., Boston University
Scientific Management in Office Practice
 Methods and Procedure Division, General Electric Company
- ABRAHAM HYMAN LEVINE, B.S., Tufts College
Work Simplification
 Industrial Engineer, General Electric Company
- BENJAMIN ABBOTT LITTLE, A.B., University of Pennsylvania; Ed.M., Boston University
Business English
 Head of English Department, Winthrop Junior High School
- GEORGE E. LONERGAN
Casualty Insurance
 Superintendent Education Department, Employers Group
- DAVID S. LOVELAND, A.B., Dartmouth College; M.C.S., Amos Tuck School
Applied Security Analysis
 Research Editor, United Business Service
- EDMUND M. MACCLOSKEY, A.B., Bowdoin College; A.M., Boston University
Public Speaking
 Drama and Speech, Belmont High School
- LAWRENCE HOWARD MALCHMAN, B.S., B.A., Ed.M., Boston University
Accounting for Management
 Northeastern University
- JOHN E. MARSHALL, B.S. in I.E., Northeastern University
Job Analysis
 Industrial Consultant
- RAYMOND WOODILL MATHER, Bentley School of Accounting
Principles of Production, Production Planning and Control
 Personnel Department, General Electric Company
- JOHN E. MILLEA, A.B., Clark University; M.B.A., Harvard University
Management Problems and Policies, Production Planning and Control
 Industrial Consultant
- CEDRIC BENJAMIN MINAS, LL.B., LL.M., Boston University; Boston University College of
 Business Administration
Business Economics
 Instructor, Medford High School; Member, Massachusetts Bar
- WALLACE P. MORS, Ph.B., A.M., Ph.D., University of Chicago; C.P.A.
Financial Organization
 Babson Institute
- ALFRED LOWELL MOSELEY, A.B., Emory University; A.M., Boston University
Psychology
 Simmons College
- A. HOWARD MYERS, A.B., Cornell University; M.A., Ph.D., Columbia University
Labor Relations Seminar
 Labor Arbitrator; Associate Professor, Northeastern University
- FRANKLIN NORVISH, B.S., Colby College; M.A., Yale University
Business English, Public Speaking
 Northeastern University

- EDWARD T. O'DONNELL, B.C.S., New York University; M.B.A., Boston University
Business Statistics
Employment Analyst, U. S. Bureau of Labor Statistics
- HARRY OLINS, A.B., LL.B., Harvard University
Business Law, Government Controls in Business, Contracts
Attorney at Law
- JOHN L. OLSEN, JR., S.B., Massachusetts Institute of Technology
Office Organization and Administration
Office Management Engineer, Liberty Mutual Insurance Co.
- ROBERT A. OLSEN, S.B., Massachusetts Institute of Technology
Scientific Management
Methods Engineer, Jordan Marsh Company
- JAMES A. PATTERSON, B.S., Northeastern University; M.A., Boston University; C.P.A.
Advanced Accounting Problems
Public Accountant, Haskins and Sells
- DOUGLAS PELTON, A.B., M.A., Harvard University
Business Economics, Auditing
Budget Officer, Veterans Administration
- CLINTON A. PETERSON, B.S., Rhode Island State College
Accounting for Management
Babson Institute
- PHILIP POLANSKY, B.S. in E.E., Tufts College
Purchasing
Purchasing Agent, Eagle Shoe Company
- FRANK WALTER PRESCOTT
Industrial Journalism
Calloway Associates
- HOMER P. RANSOM, B.S. in I.E., Northeastern University
Work Simplification
Motion Study Specialist, General Electric Company
- NICHOLAS ALFRED RASETZKI, A.B., Hobart College; A.M., Boston University
Business English
Babson Institute
- ROBERT R. RENNER, University of Cincinnati
Production Planning and Control
Treasurer, National Pneumatic Company, Inc.
- WILLIAM H. REYNOLDS, S.B., A.M., Harvard University
Business English
Northeastern University
- C. JAY ROBINSON, LL.B., Northeastern University
Fire Insurance, Inland Marine Insurance
Manager Business Development, Fairfield and Ellis
- STANLEY O. ROBINSON, B.S. in M.E., Tufts College
Time Study
Industrial Consultant
- EDWARD L. SCHWARTZ, A.B., City College of New York; LL.B., Harvard University
Corporations, Partnerships, Agencies
Attorney at Law
- LEONARD AVERN SEDER, S.B. in Ch.E., Massachusetts Institute of Technology
Quality Control, Advanced Quality Control
Quality Control Engineer, Gillette Safety Razor Company
- ROBERT M. SEGAL, A.B., Amherst College; LL.B., Harvard University
The Labor Contract
Attorney at Law
- SAMUEL SHAPIRO, A.B., Tufts College; M.B.A. Harvard University
Business Economics
Industrial Consultant
- BERNARD HORACE SHELTON, Massachusetts Institute of Technology; Boston University
Principles of Selling, Introduction to Sales Management
Field Underwriter, Home Life Insurance Company of New York

- LEONARD S. SILK, A.B., University of Wisconsin; Ph.D., Duke University
Business Economics
 Simmons College
- PAUL E. TIERNEY, Bentley School of Accounting; C.P.A.
Internal Auditing
 Auditor for John Hancock Mutual Life Insurance Company
- TRUMBULL L. SIMMONS, B.A., Haverford College; M.A., Harvard University
Business English
 Newton High School
- ALBERT SLAVIN, Ed.B., Ed.M., Boston University
Intermediate Accounting
 Northeastern University
- ALFRED E. SMITH, Boston University
Retail Store Advertising
 Assistant Advertising Director, Gilchrist Company
- RICHARD L. SMITH, B.A., University of Utah; M.B.A., Northwestern University
Accounting for Management
- ALLAN SPACK, LL.B., Northeastern University
Contracts, Negotiable Instruments
 Attorney at Law
- BENJAMIN FRANKLIN STACEY, A.B., Dartmouth College; M.C.S., Amos Tuck School
Business Planning and Research, Sales Management
 Industrial Analyst, The First National Bank of Boston
- WILLIAM M. STEWART, B.S., Springfield College
Principles of Selling
 Agent, Union Central Life Insurance Company
- ARTHUR JOHN SULLIVAN, B.S.Ed., Salem Teachers College; Ed.M., M.B.A., Boston University;
 C.P.A.
Accounting Aids to Management, Cost Accounting for Management
 Instructor, Boston English High School
- EDWARD J. SULLIVAN, JR., B.L.I., Emerson College; M.A., University of Michigan
Public Speaking
 Northeastern University
- ERNEST LEO SULLIVAN, B.B.A., Ed.M., Boston University
Introductory Accounting and Intermediate Accounting
 Instructor, Boston Clerical School
- JOHN E. SULLIVAN, A.B., Boston College; Ed.M., Boston University
Marketing
 Assistant to Director, Fisher School
- ALLAN A. TEPPER, A.B., LL.B., Harvard University
Labor Legislation and Government Agencies
 Labor Lawyer
- MARK WAINER, LL.B., LL.M., Boston University
Business Law
 Attorney at Law
- ROBERT JOHN WEAVER, B.B.A., Northeastern University; C.P.A.
Budget Procedure, Executive Accounting
 Northeastern University
- DUDLEY A. WEISS, A.B., LL.B., Harvard University
Government Controls in Business
 Attorney at Law
- WELDON WELFLING, A.B., Swarthmore; M.A., Ph.D., Princeton University
Financial Organization
 Professor and Head of Department of Economics, Simmons College
- EDWARD R. WILLETT, B.S., Northeastern University; M.A., Harvard University
Business Statistics
 Northeastern University
- JOHN WILLIAM ZORN, B.L.I., Emerson College; Ed.M., Boston University
Public Speaking, Business Conferences
 Head of English Department, Weston High School

Northeastern University

General Statement

NORTHEASTERN UNIVERSITY is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in whom the control of the institution is vested. The Board of Trustees has four standing committees: (a) an Executive Committee which serves as an Ad Interim Committee between the regular meetings of the Board of Trustees and has general supervision of the financial and educational policies of the University; (b) a Committee on Buildings which has general supervision over the building needs of the University; (c) a Committee on Funds and Investments which has the responsibility of administering the funds of the University; (d) a Development Committee which is concerned with furthering the development plans of the University.

Founded in 1898, Northeastern University, from the outset, had as its dominant purpose the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the programs of other institutions but has sought "to bring education more directly into the service of human needs."

With respect to program, Northeastern has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated;
- To effective teaching;
- To advising and guiding students;
- To giving students the chance to build well-rounded personalities through a balanced program of extracurricular activities.

The Northeastern Plan of Education is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day,
- Adult Education by Night.

The plan has been developed in such a way that experience in jobs with pay is utilized to help students of limited financial resources secure an education and at the same time gain the maximum educational benefit from their practical experience. So far as the New England States are concerned, Northeastern University is the only institution whose day colleges, other than the School of Law, are conducted under the Co-operative Plan.

The several schools and programs of the University are conducted either under the name "Northeastern University" or by its affiliated schools — the Lincoln Schools, and The Huntington Day School for Boys. The following is a brief outline of the principal types of educational opportunities offered.

In the field of Co-operative Education there are three day colleges — the College of Liberal Arts, the College of Engineering, and the College of Business Administration. The College of Liberal Arts offers majors in the usual fields of the arts and the sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. The College of Engineering, one of the largest engineering colleges in the United States, has curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. The College of Business Administration has curricula in Accounting, Marketing and Advertising, and Industrial Administration. The College of Engineering and the College of Business Administration confer the degree of Bachelor of Science with specification indicating the field of specialization. The Co-operative Plan, under which all of these day colleges operate, enables the student to alternate regular periods of classroom instruction with supervised employment in an industrial or commercial position, thus combining theory and practice in an exceedingly effective manner. Apart from the educational advantages of the Co-operative Plan is the opportunity for self-support while the student is pursuing his studies at Northeastern University. During the co-operative periods, students not only gain experience but are also paid for their services. Approximately three hundred business and industrial concerns co-operate with Northeastern University in making this program effective.

The School of Law conducts both a day and an evening undergraduate program which leads to the degree of Bachelor of Laws, and a graduate program leading to the degree of Master of Laws.

The Adult Education Program has been developed in the evening work of the School of Law as indicated above, in the School of Business, and in the evening courses of the College of Liberal Arts. The School of Business has curricula in Management, Accounting, and Engineering and Business. This School awards the Bachelor of Business Administration degree with specification. The University also operates a division of the School of Business in Springfield. The College of Liberal Arts offers certain of its courses during evening hours constituting a program, three years in length, equivalent in hours to one-half the requirements for the A.B. or S.B. degree, and providing a general education and preparation for admission to the School of Law. The degree of Associate in Arts is conferred upon those who complete this program.

The Adult Education Program has also been developed through the Lincoln Schools, which are affiliated with and conducted by Northeastern University. The classes in these schools are held at convenient evening hours. The Lincoln Technical Institute offers curricula upon a college level in various phases of engineering leading to the degree of Associate in Engineering; whereas the Lincoln Preparatory School, recognized by the leading New England colleges, prepares students for admission to college and offers other standard high school programs.

The University also operates a Bureau of Business and Industrial Service which provides training at the college level through intensive, practical courses in highly specialized areas which are especially designed for business and industry. These courses are conducted either in the industrial plant or at the University.

The Huntington Day School for Boys, also affiliated with and conducted by Northeastern University, is the outgrowth of a demand in the city of

Boston for an urban preparatory school with high educational standards which would furnish thorough preparation for admission to the leading colleges and universities. While easily accessible to the various sections of Boston and to the suburbs, it has the facilities of a country day school and offers a country day school program. This School is one of the leading preparatory schools of the country.

Location of University Buildings

Northeastern University is located in Boston, a city which is rich in educational and cultural opportunities. The School of Business is in the University center on Huntington Avenue just beyond Massachusetts Avenue at the entrance to the Huntington Avenue Subway. The School is easily reached from the various railroad stations and from all points of the Metropolitan Transit Authority. Ample parking space is available in the rear of Richards Hall.

Richards Hall

Richards Hall, a four-story building at 360 Huntington Avenue, contains over one hundred thousand square feet of floor space devoted to administrative and instructional purposes. On the first floor are the general administrative offices of the University. The University Bookstore, the "Husky Hut" and the student checkroom are located on the ground floor. On the various floors are three large lecture halls and numerous classrooms and laboratories. The offices of the Evening Division are located on the first floor.

Student Center Building

The Student Center Building contains administrative offices, facilities for student activities, reading and study rooms, lounges, some classrooms and an auditorium seating 1,300 for student convocations.

Science Hall

This building contains forty-two thousand square feet of floor space. Here are located the Chemical Engineering and Biological laboratories, a large commons room open to day and evening students, and eighteen classrooms and lecture halls.

East Building

This building contains the University library, classrooms, and certain laboratories.

Botolph Building

The South Building of the University contains certain laboratories, a large lecture hall, and several classrooms.

Beacon Hill Building

The Beacon Hill Building, now occupied exclusively by the School of Law, is located at 47 Mt. Vernon Street, within sight of the State House, and contains administrative offices, a library, classrooms, student lounges, and other facilities.

School of Business

The Background of an Institution

FORTY-THREE YEARS ago, in March of 1907, the first undergraduate evening school of business in New England was organized. This was the beginning of Northeastern University School of Business, a pioneer endeavor to bridge an existing gap in business and professional education. Four years later, the School was authorized by the Massachusetts Legislature to grant university degrees to its graduates.

Administrative Policy

The School of Business was founded to serve those who have only evening hours free for study — a special field, limited to the education of the person who has permanently left day school and gone to work. The Northeastern University evening student is an adult, usually more mature than the student of a day school. He is in direct touch with business and is expected to take an active part in his own supervised training. The constant effort of the administrative and teaching staff is toward more effective means of suiting their educational service to the individual evening student.

Purpose

Now, just as at the start, the School seeks first to determine what business needs in its personnel, and then to supply properly trained men and women who can fulfill those needs.

The training of a student at Northeastern has always been conducted so that a graduate receives not only a B.B.A. degree, but an immediately applicable vocational training equipping him to fill a better position in some one business activity. For his future, he has the advantage of a thorough background of business methods and an appreciation of the problems of management, which, if properly used, may lead to advancement and executive responsibilities.

Staff of Instruction

The teaching staff of the School in Boston and Springfield is recruited from business and professional leaders of New England business. The instructors are college-trained men who have proved their ability in their various fields of specialization. They are selected on the basis of their ability to convey knowledge to others in an interesting, inspiring, and effective manner. They are also chosen for the breadth of their training and experience.

Success of the Alumni

The best indication of the cumulative rewards to be won by pursuing a systematic program of study in spare evening hours is to be found in the records of Northeastern School of Business Alumni.

A study made just prior to the war covering all Boston graduates conclusively shows that better positions and increased incomes are directly traceable to the evening hours spent in preparation at Northeastern.

A portion of this study is the comparison of positions held by the alumni when they entered the School as freshmen with the positions they held at the time of the study.

ALUMNI POSITIONS

	Upon Entrance	Date of Study
	%	%
Presidents and Other Corporation Officers	0.0	3.8
Owners of Business	1.0	13.1
Treasurers and Comptrollers	0.3	7.7
Accountants	7.0	16.9
Office Managers	1.6	7.4
Department Managers	2.9	11.5
Salesmen	3.8	3.8
Educators	8.6	7.0
Government Employees	2.6	7.7
Bookkeepers	18.8	1.3
Clerks	34.2	6.4
Factory Workers	5.8	2.2
Unemployed	2.9	1.9
Miscellaneous	10.5	9.3

This pronounced trend to better and more responsible positions is further substantiated by a study of the income of the same alumni group over the same period.

It was found that the alumni who had been out of the School of Business not more than ten years had increased their income an aggregate of 73.2%. For those who graduated more than ten years ago, this increase amounts to 223.6%. Another study of the income of students still in school shows that the average School of Business student begins his advancement in business and in income even while he is still at his training. On the average, the increase in income during the period of attendance more than covers tuition charges.

The Student Body

The character of a student body determines the standards which a school can maintain. Nothing is more essential to the success of an educational institution than a careful selection of incoming students. This principle applies just as readily to an evening school as to a day school. Standards are invariably adjusted to the average intelligence of the students. For this reason, Northeastern University School of Business maintains standards of admission which result in a student body capable of pursuing work of standard college grade during evening hours.

In 1949-1950 the student body consisted of 3317 men and women of widely varied ages and occupations. The youngest student was 19 years of age and the oldest 53 years. The average age was 26 years.

About two-thirds of the students are married men who have realized that if they are to increase their earning power they must fit themselves for advancement. That the training offered by the School has enabled the students to improve their earning capacities and enlarge their responsibilities is conclusively proved by a study which showed that students in the School substantially increased their incomes in the six-year period between entering the School and graduation.

Placement Service

For Graduates

While the School cannot guarantee positions to its graduates, the number of requests for men usually exceeds the number available in the graduating class of any given year. The policy of the School is to find the best equipped and qualified men and women among its graduates for the positions which the School is called upon to fill.

The School in recommending a graduate for a position furnishes the prospective employer with the facts as to the graduate's ability, character, attitudes, habits, and other qualifications for the position as revealed by the School records. In the last analysis, however, placement in a position depends quite largely upon the graduate's ability to sell his services to the prospective employer. Most employers prefer to consider two or more candidates for a position and generally request the School to suggest more than one person. Many manufacturing and commercial firms throughout New England call upon this School to assist them in filling important executive and managerial positions.

No charge is made for placement service.

For Students

Many requests from employers are received by the School, during normal times, for young men and women of potential ability to fill important clerical and junior executive positions. It is the policy of the School to serve the students whenever possible by placing them in those positions which promise attractive opportunities for development and advancement. The School, however, cannot guarantee to place its students, but it does endeavor to keep in close touch with those who desire placement service and to assist them in obtaining satisfactory advancements in positions and income. No charge is made for placement service. Those needing this assistance should file an application at the School Office.

School of Business

Programs of Instruction

THE SCHOOL OF BUSINESS provides the following major programs of instruction for undergraduate students:

Accounting

1. A specialized four-year program leading to the degree of Associate in Accounting.
2. A six-year program leading to the degree of Bachelor of Business Administration in Accounting. (See page 21.)

Management

Four-and Six-year programs with opportunity for specialization in one of the following fields: Business Management, Industrial Management, Marketing, Transportation and Traffic Management. The four-year programs lead to the title of Associate in Business Administration and the six-year programs to the degree of Bachelor of Business Administration in Management. (See page 25.)

Law and Business

A six-year program combining the study of law and business, leading to the degree of Bachelor of Business Administration in Law and Business. (See page 30.)

Engineering and Management

A six-year program combining the study of engineering and business, leading to the degree of Bachelor of Business Administration in Engineering and Management. (See page 31.)

Institute of Insurance

Designed to meet a demand for a practical approach to the basic principles and practices of current procedures and operations in the field of insurance. (See page 32.)

Institute of Retailing

A program of integrated courses in the field of retailing leading to a certificate of proficiency. (See page 33.)

Institute of Transportation and Traffic Management

A specialized program for persons desirous of obtaining fundamental and practical knowledge in the current practices of traffic management related to the procurement and distribution of merchandise. (See page 34.)

Labor Relations Institute

An integrated program of courses in the study of labor-management relations leading to a certificate of proficiency. (See page 35.)

Office Management Institute

A program of specialized courses for those who wish training in the theory and practice of modern scientific management as applied to office procedures. (See page 36.)

Special Programs

The School will arrange special one-year, two-year, or longer programs of study to meet the needs of individual students. These special programs will be arranged upon consultation with the Dean.

Accounting

The Accounting Profession

Taxation, legal requirements governing qualifications for listing in the stock market, corporation laws governing the preparation of financial reports, the needs of government, and many other developments in the conduct of business have broadened the scope of accounting to such a degree that in normal times the supply of trained accountants is not adequate to meet the demand. Moreover, a knowledge of accounting is universally regarded as essential in all phases of business management. There is a large field of public accounting which is being developed and, with the increased emphasis which financial institutions are placing upon accounting, the need for college-trained Certified Public Accountants is increasing every year.

Opportunities in the field of accounting are many. Financial returns compare favorably with those of other professions such as law, medicine, and engineering. The normal development for those employed by an accounting firm is fairly well standardized from the position of junior assistant through that of the senior accountant into firm membership. As a firm member, the usual earnings range from \$4,000 to \$25,000 a year, and frequently even higher.

While the remuneration in the field of public accounting for properly trained men is attractive, the field of commercial and private accounting offers even more attractive inducement. The latest census figures show that there are 191,571 persons engaged as accountants and auditors in the United States. From trained accountants are selected many of the business and industrial executives, including office managers, comptrollers, treasurers, and other officers of business concerns. Salaries of treasurers and comptrollers vary from \$4,000 to \$15,000; office managers from \$3,000 to \$6,000; chief accountants from \$2,500 to \$5,000. Many senior accountants have advanced into responsible executive positions paying \$10,000 and more.

The Accounting Programs

Students of accounting in the School of Business may follow programs of training in this specialized subject which prepare them to take the examination for Certified Public Accountant (C.P.A.) or to carry on work of major responsibility in commercial accounting with private or public business firms.

Thoroughness of instruction is all-important. The trained accountant must be able to adapt himself quickly to the rapidly changing conditions of modern business. He should be ready to assume executive responsibility outside the field of accounting. This involves, of course, a background of understanding of various functions of business quite apart from the specialized accounting field.

Students may register for either the Associate Degree Program, which may be completed in four years, or for the B.B.A. Degree Program, which requires six years. The shorter program is comprised specifically of accounting courses. The two additional years required in the B.B.A. Degree Program, however, provide an opportunity to study managerial and administrative subjects which give one a basic understanding of business at large and equip him to assume responsibility in an executive capacity.

Accounting

Leading to the Degree of B.B.A. in Accounting

PUBLIC ACCOUNTING OPTION (C.P.A.)

PROGRAM OF COURSES*

		FIRST YEAR			
Course No.		Semester Hours	Course No.		Semester Hours
E1	Business English.....	2½	E2	Business English.....	2½
A1-2	Introductory Accounting....	5	A3-4	Intermediate Accounting....	5
		7½			7½
SECOND YEAR					
A7	Accounting Problems.....	2½	A8	Accounting Problems.....	2½
L13	Business Law I.....	2½	L14	Business Law II.....	2½
Ec1	Business Economics.....	2½	Ec2	Business Economics.....	2½
		7½			7½
THIRD YEAR					
A17	Advanced Acctg. Problems..	2½	A18	Advanced Acctg. Problems..	2½
L15	Business Law III.....	2½	A25	Mathematics of Accounting..	2½
M5	Psychology.....	2½	M4	Scientific Management.....	2½
		7½			7½
FOURTH YEAR					
A9	Cost Accounting.....	2½	A10	Cost Accounting.....	2½
A11	Auditing	2½	A12	Audit Practice.....	2½
Ec3	Financial Organization.....	2½	Ec4	Financial Organization.....	2½
		7½			7½
FIFTH YEAR					
A24	Budget Procedure.....	2½	A28	Executive Accounting.....	2½
Ec5	Investment Principles.....	2½	A15	Constructive Accounting....	2½
A23	Statistics.....	2½	A35	Analysis of Financial Statements	2½
		7½			7½
SIXTH YEAR					
A19	C.P.A. Problems.....	5	A20	C.P.A. Problems.....	5
A13	Income Tax Procedure.....	2½	A14	Income Tax Procedure.....	2½
		7½			7½

The above is a suggested program of integrated courses for those wishing to train for public accounting by certifying through the C.P.A. examinations.

*The courses in heavy type are required in either of the degree programs. Upon approval of the dean, a limited substitution for supporting courses (those in regular type) may be arranged to meet the training needs of the individual student.

Requirements for the B.B.A. Degree in Accounting

	Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above).....		90
E7-8, Business Readings or T3-4, Thesis.....		5
Occupational Experience.....		30

Total Requirements for the Degree..... 125

Requirements for the Degree of Associate in Accounting

Four-Year Program

This program requires a total of 60 semester hours of credit including all of the accounting courses listed as required in the above program. This provides a practical and intensive preparation for work in public accounting and basic preparation for those who are planning to take the C.P.A. examinations.

Accounting

Leading to the Degree of B.B.A. in Accounting

COMMERCIAL OR INDUSTRIAL ACCOUNTING OPTION**PROGRAM OF COURSES***

FIRST YEAR			
Course No.	Semester Hours	Course No.	Semester Hours
E1 Business English.....	2½	E2 Business English.....	2½
A1-2 Introductory Accounting....	5	A3-4 Intermediate Accounting....	5
	7½		7½
SECOND YEAR			
A7 Accounting Problems.....	2½	A8 Accounting Problems.....	2½
L13 Business Law I.....	2½	L14 Business Law II.....	2½
Ec1 Business Economics.....	2½	Ec2 Business Economics.....	2½
	7½		7½
THIRD YEAR			
A17 Advanced Acctg. Problems..	2½	A18 Advanced Acctg. Problems..	2½
L15 Business Law III.....	2½	A25 Mathematics of Accounting..	2½
Ec3 Financial Organization.....	2½	Ec4 Financial Organization.....	2½
	7½		7½
FOURTH YEAR			
A9 Cost Accounting.....	2½	A10 Cost Accounting.....	2½
A11 Auditing.....	2½	L16 Govt. Controls in Business...	2½
M53 Fidelity Insurance.....	2½	A34 Internal Auditing.....	2½
	7½		7½
FIFTH YEAR			
A24 Budget Procedure.....	2½	A28 Executive Accounting.....	2½
Ec7 Statistics.....	2½	A15 Constructive Accounting....	2½
A35 Analysis of Financial Statements	2½	M22 Labor-Management Relations.	2½
	7½		7½
SIXTH YEAR			
A13 Income Tax Procedure.....	2½	A14 Income Tax Procedure.....	2½
M9 Management Prob. & Policies	2½	M10 Management Prob. & Policies	2½
M5 Psychology.....	2½	E6 Business Conferences.....	2½
	7½		7½

The above is a suggested program of integrated courses for those wishing to train for commercial or industrial accounting leading to such positions as chief accountant, office manager, treasurer, or comptroller.

*The courses in heavy type are required in either of the degree programs. Upon approval of the dean, a limited substitution for supporting courses (those in regular type) may be arranged to meet the training needs of the individual student.

Requirements for the B.B.A. Degree of Accounting

Six-Year Program		Semester Hours
Required and Suggested Supporting Courses (listed above)		90
E7-8, Business Readings or T3-4, Thesis.....		5
Occupational Experience.....		30
Total Requirements for the Degree.....		125

Requirements for the Degree of Associate in Accounting**Four-Year Program**

This program requires a total of 60 semester hours of credit including all of the required courses listed above.

Accounting
Leading to the Degree of B.B.A. in Accounting
COST ACCOUNTING OPTION
PROGRAM OF COURSES*

		FIRST YEAR			
Course No.		Semester Hours	Course No.		Semester Hours
E1	Business English.....	2½	E2	Business English.....	2½
A1-2	Introductory Accounting....	5	A3-4	Intermediate Accounting....	5
		7½			7½
SECOND YEAR					
A7	Accounting Problems.....	2½	A8	Accounting Problems.....	2½
L13	Business Law I.....	2½	L14	Business Law II.....	2½
Ec1	Business Economics.....	2½	Ec2	Business Economics.....	2½
		7½			7½
THIRD YEAR					
A17	Advanced Acctg. Problems..	2½	A18	Advanced Acctg. Problems..	2½
L15	Business Law III.....	2½	A25	Mathematics of Accounting..	2½
M3	Principles of Production....	2½	L16	Govt. Controls in Business ...	2½
		7½			7½
FOURTH YEAR					
A9	Cost Accounting.....	2½	A10	Cost Accounting.....	2½
A11	Auditing.....	2½	A34	Internal Auditing.....	2½
Ec3	Financial Organization.....	2½	Ec4	Financial Organization.....	2½
		7½			7½
FIFTH YEAR					
A24	Budget Procedure.....	2½	A28	Executive Accounting.....	2½
A35	Analysis of Financial Statements	2½	M16	Prod. Planning & Control....	2½
A30	Advanced Cost Accounting..	2½	A31	Advanced Cost Accounting..	2½
		7½			7½
SIXTH YEAR					
A32	Standard Cost Accounting...	2½	A15	Constructive Accounting....	2½
A13	Income Tax Procedure.....	2½	A14	Income Tax Procedure.....	2½
M9	Management Prob. & Policies.	2½	M10	Management Prob. & Policies	2½
		7½			7½

The program suggested above is designed for those who are specifically interested in training for the field of cost accounting.

*The courses in heavy type are required in either of the degree programs. Upon approval of the dean, a limited substitution for supporting courses (those in regular type) may be arranged to meet the training needs of the individual student.

Requirements for the B.B.A. Degree in Management

	Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above)		90
E7-8, Business Readings or T3-4, Thesis		5
Occupational Experience.....		30
Total Requirements for the Degree		125

Requirements for the Degree of Associate in Management

Four-Year Program

This program requires a total of 60 semester hours of credit including all of the accounting courses listed as required in the above program.

Business and Industrial Management Programs

The School of Business offers four optional curricula under the Management Program. The suggested Programs of Courses shown on pages 26–29 are designed to provide integrated and balanced curricula for students training for executive positions in the Management aspects of business and industry.

A recent extensive study of occupational opportunities shows that most college men who enter work in distribution, industry, transportation, and banking become involved sooner or later in some function of operating management where they become responsible for the direction of human effort within their organization.

1. Business Management

There are many persons who, in preference to specialization in any specific field, are interested in procuring a broad background of courses underlying the general operations of business. This program is designed to serve their needs. It possesses, however, sufficient flexibility to provide the necessary course distribution to satisfy the individual needs of students in relation to their vocational opportunities.

2. Industrial Management

This program of courses comprises an integrated series of courses covering the fundamental manufacturing processes, industrial organization, relation of product design to the market, production processes and methods of production planning and control, motion and time study and related topics. This program is designed to provide training for managerial responsibility in commercial and industrial enterprises requiring a technical knowledge of management problems combined with a business background.

3. Marketing

Due to the increasing complexity of our national and international economy, the distribution of our resources of both natural and manufactured commodities will occupy a position of increasing importance. The program is developed around the study of markets and marketing problems including the methods of selling and sales management, merchandising principles and practices, advertising, with sufficient background courses in business and industrial management to tie in with the production phases of the problems. It also includes the legal aspects, the growing government control of business, and allied topics.

4. Transportation and Traffic Management

The rapid changes in several phases of transportation are creating many entirely new concepts in the methods and economies of business operation.

The curriculum offers an integrated program of courses designed to present a practical approach to the basic principles and practices of current operations for persons employed in or training for positions in the traffic departments of industrial concerns, or with railroads, trucking companies, or the airlines. The courses will prepare the student for the Interstate Commerce Commission Practitioners' Examinations.

Management

Leading to the Degree of B.B.A. in Management

BUSINESS MANAGEMENT OPTION*

PROGRAM OF COURSES

FIRST YEAR					
First Semester			Second Semester		
Course No.		Semester Hours	Course No.		Semester Hours
E1	Business English.....	2½	E2	Business English.....	2½
A5	Accounting for Mgmt.....	2½	A6	Accounting for Mgmt.....	2½
L5	Contracts.....	2½	L6	Contracts.....	2½
		<u>7½</u>			<u>7½</u>
SECOND YEAR					
Ec1	Business Economics.....	2½	Ec2	Business Economics.....	2½
L7	Corp'ns, Partnership, Agency	2½	L8	Corp'ns, Partnership, Agency	2½
D1	Marketing.....	2½	D2	Marketing.....	2½
		<u>7½</u>			<u>7½</u>
THIRD YEAR					
Ec7	Statistics.....	2½	L16	Govt. Controls in Business..	2½
L9	Law of Sales.....	2½	M41	Real Estate.....	2½
Ec3	Financial Organization.....	2½	Ec4	Financial Organization.....	2½
		<u>7½</u>			<u>7½</u>
FOURTH YEAR					
M32	Scientific Mgmt. in Office Pract.	2½	M33	Office Organization & Admin.	2½
L11	Negotiable Instruments.....	2½	L12	Security Trans.—Insolvency..	2½
M7	Credits.....	2½	D4	Sales Management.....	2½
		<u>7½</u>			<u>7½</u>
FIFTH YEAR					
M34	Forms Design and Control..	2½	M35	Office Systems & Procedures	2½
M25	Insurance.....	2½	M26	Insurance.....	2½
M17	Bus. Planning & Research..	2½	M18	Bus. Planning & Research..	2½
		<u>7½</u>			<u>7½</u>
SIXTH YEAR					
M9	Management Probs. & Pol.	2½	M10	Management Probs. & Pol..	2½
M22	Labor-Management Relations	2½	M29	Labor Legislation I.....	2½
M31	Techniques of Supervision....	2½	E6	Business Conferences.....	2½
		<u>7½</u>			<u>7½</u>

*The courses in heavy type are Required Courses for all Degree Students.

Upon approval of the dean, limited substitutions for supporting courses (those in regular type) may be arranged to serve the training needs of individual students.

Requirements for the B.B.A. Degree in Management

Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above).....	90
E7-8, Business Readings or T3-4, Thesis.....	5
Occupational Experience.....	30

Total Requirements for the Degree..... 125

Requirements for the Degree of Associate in Management

Four-Year Program

This program requires a total of 60 semester hours selected from the required courses listed above subject to approval of the dean.

Management
 Leading to the Degree of B.B.A. in Management
INDUSTRIAL MANAGEMENT OPTION*
PROGRAM OF COURSES

FIRST YEAR					
First Semester			Second Semester		
Course No.		Semester Hours	Course No.		Semester Hours
E1	Business English.....	2½	E2	Business English.....	2½
A5	Acctg. for Management.....	2½	A6	Acctg. for Management.....	2½
M13	Work Simplification I.....	2½	M14	Time Study I.....	2½
		7½			7½
SECOND YEAR					
Ec1	Business Economics.....	2½	Ec2	Business Economics.....	2½
A21	Cost Acctg. for Management	2½	A22	Cost. Acctg. for Management	2½
M28	Job Analysis and Eval.....	2½	M36	Industrial Safety.....	2½
		7½			7½
THIRD YEAR					
M3	Prin. of Production.....	2½	M16	Production, Pl'ng & Control	2½
L13	Law I, Contracts, Agency...	2½	L14	Law II, Sales, Negot. Inst....	2½
M5	Industrial Psychology.....	2½	M31	Techniques of Supervision....	2½
		7½			7½
FOURTH YEAR					
Ec3	Financial Organization.....	2½	Ec4	Financial Organization.....	2½
L15	Law III, Partnerships, Corp.	2½	M6	Purchasing.....	2½
Ec7	Statistics.....	2½	M37	Quality Control.....	2½
		7½			7½
FIFTH YEAR					
M23	Personnel Administration...	2½	M24	Personnel Administration ..	2½
M22	Labor-Management Relations	2½	M29	Labor Legislation.....	2½
M25	Insurance.....	2½	M26	Insurance.....	2½
		7½			7½
SIXTH YEAR					
M9	Management Probs. & Policies	2½	M10	Management Probs. & Policies	2½
M30	The Labor Contract.....	2½	M11	Gov't Controls of Business...	2½
M15	Wage Administration.....	2½	E6	Business Conferences.....	2½
		7½			7½

*The courses in heavy type are Required Courses for all Degree Students.

Upon approval of the dean, limited substitutions for supporting courses (those in regular type) may be arranged to serve the training needs of individual students.

Requirements for the B.B.A. Degree in Management

Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above).....	90
E7-8, Business Readings or T3-4, Thesis.....	5
Occupational Experience.....	30
Total Requirements for the Degree.....	125

Requirements for the Degree of Associate in Management

Four-Year Program

This program requires a total of 60 semester hours selected from the required courses listed above subject to approval of the dean.

Management
Leading to the Degree of B.B.A. in Management
MARKETING OPTION*
PROGRAM OF COURSES

FIRST YEAR			
First Semester		Second Semester	
Course No.	Semester Hours	Course No.	Semester Hours
E1 Business English.....	2½	E2 Business English.....	2½
A5 Accounting for Management	2½	A6 Accounting for Management	2½
L5 Contracts.....	2½	L6 Contracts.....	2½
	7½		7½
SECOND YEAR			
D1 Marketing.....	2½	D2 Marketing.....	2½
Ec1 Business Economics.....	2½	Ec2 Business Economics.....	2½
L9 Law of Sales.....	2½	D3 Principles of Selling.....	2½
	7½		7½
THIRD YEAR			
L7 Corp'ns, Partnership, Agency	2½	L8 Corp'ns, Partnership, Agency	2½
D5 Advertising Principles.....	2½	D9 Advertising Problems.....	2½
Ec3 Financial Organization.....	2½	Ec4 Financial Organization.....	2½
	7½		7½
FOURTH YEAR			
D8 Retail Store Merchandising..	2½	D7 Retail Store Management.....	2½
Ec7 Business Statistics.....	2½	M6 Purchasing.....	2½
L11 Negotiable Instruments.....	2½	L12 Security Trans.—Insolvency	2½
	7½		7½
FIFTH YEAR			
D11 Market Research.....	2½	D4 Sales Management.....	2½
M44 Fund. Transportation.....	2½	M45 Traffic Management.....	2½
Ec17 Internat. Economics.....	2½	M7 Credits.....	2½
	7½		7½
SIXTH YEAR			
M19 Management Prob. & Policies	2½	M20 Management Prob. & Policies	2½
M17 Bus. Planning and Research	2½	M18 Bus. Planning and Research	2½
D19 Foreign Trade.....	2½	D20 Foreign Trade.....	2½
	7½		7½

*The courses in heavy type are Required Courses for all Degree Students.

Upon approval of the dean, limited substitutions for supporting courses (those in regular type) may be arranged to serve the training needs of individual students.

Requirements for the B.B.A. Degree in Management

Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above).....	90
E7-8, Business Readings or T3-4, Thesis.....	5
Occupational Experience.....	30
Total Requirements for the Degree.....	125

Requirements for the Degree of Associate in Management

Four-Year Program

This program requires a total of 60 semester hours selected from the required courses listed above subject to approval of the dean.

Management

Leading to the Degree of B.B.A. in Management

TRANSPORTATION AND TRAFFIC MANAGEMENT OPTION* PROGRAM OF COURSES

FIRST YEAR			
First Semester		Second Semester	
Course No.	Semester Hours	Course No.	Semester Hours
E1 Business English.....	2½	E2 Business English.....	2½
Ec1 Business Economics.....	2½	Ec2 Business Economics.....	2½
M44 Principles of Transportation	2½	M45 Traffic Management.....	2½
	7½		7½
SECOND YEAR			
A5 Accounting for Management	2½	A6 Accounting for Management	2½
L13 Bus. Law I—Contracts, Agency	2½	L14 Bus. Law II—Sales, Neg. Inst.	2½
M65 Rates and Tariffs.....	2½	M66 Rates and Tariffs.....	2½
	7½		7½
THIRD YEAR			
Ec3 Financial Organization.....	2½	Ec4 Financial Organization.....	2½
L15 Law III—Partnerships, Corp.	2½	L16 Gov't Controls in Business ..	2½
M61 ICC Practice & Procedure...	2½	M62 ICC Practice & Procedure..	2½
	7½		7½
FOURTH YEAR			
M25 Casualty Insurance.....	2½	M26 Casualty Insurance.....	2½
M5 Industrial Psychology.....	2½	M31 Techniques of Supervision....	2½
M63 Motor Carrier Operations...	2½	M36 Industrial Safety.....	2½
	7½		7½
FIFTH YEAR			
M23 Personnel Administration...	2½	M24 Personnel Administration...	2½
M51 Inland Marine Insurance....	2½	M52 Inland Marine Insurance....	2½
M22 Labor Management Relations.	2½	M29 The Labor Contract.....	2½
	7½		7½
SIXTH YEAR			
M9 Management Prob. & Policies	2½	M10 Management Prob. & Policies	2½
D1 Marketing.....	2½	D2 Marketing.....	2½
M67 Motor Carrier Accounting...	2½	M68 Motor Carrier Accounting...	2½
	7½		7½

*The courses in heavy type are Required Courses for all Degree Students.

Upon approval of the dean, limited substitutions for supporting courses (those in regular type) may be arranged to serve the training needs of individual students.

Requirements for the B.B.A. Degree in Management

Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above).....	90
E7-8, Business Readings or T3-4, Thesis.....	5
Occupational Experience.....	30
Total Requirements for the Degree.....	125

Requirements for the Degree of Associate in Management

Four-Year Program

This program requires a total of 60 semester hours selected from the required courses listed above subject to approval of the dean.

Law and Business

Leading to the Degree of B.B.A. in Law and Business

PROGRAM OF COURSES*

FIRST YEAR			
Course No.	Semester Hours	Course No.	Semester Hours
E1 Business English.....	2½	E2 Business English.....	2½
A5 Acctg. for Management.....	2½	A6 Acctg. for Management.....	2½
L5 Contracts.....	2½	L6 Contracts.....	2½
	7½		7½
SECOND YEAR			
L9 Law of Sales.....	2½	M41 Real Estate.....	2½
Ec1 Business Economics.....	2½	Ec2 Business Economics.....	2½
D1 Marketing.....	2½	D2 Marketing.....	2½
	7½		7½
THIRD YEAR			
L7 Corp'ns, Partnership, Agency	2½	L8 Corp'ns, Partnership, Agency	2½
M7 Credits.....	2½	D4 Sales Management.....	2½
Ec3 Financial Organization.....	2½	Ec4 Financial Organization.....	2½
	7½		7½
FOURTH YEAR			
L11 Negotiable Instruments.....	2½	L12 Security Trans.—Insolvency	2½
Ec7 Statistics.....	2½	M6 Purchasing.....	2½
M5 Psychology.....	2½	L16 Govt. Controls in Business..	2½
	7½		7½
FIFTH YEAR			
M25 Insurance.....	2½	M26 Insurance.....	2½
M17 Business Planning & Research	2½	M18 Business Planning & Research	2½
M22 Labor-Management Relations	2½	M29 Labor Legislation I.....	2½
	7½		7½
SIXTH YEAR			
M9 Management Prob. & Policies	2½	M10 Management Prob. & Policies	2½
M4 Scientific Management.....	2½	M30 Labor Contract.....	2½
E5 Public Speaking.....	2½	E6 Business Conferences.....	2½
	7½		7½

*The courses in heavy type are Required Courses for all Degree Students.

Upon approval of the dean, limited substitutions for supporting courses (those in regular type) may be arranged to serve the training needs of individual students.

Requirements for the B.B.A. Degree in Law and Business

Six-Year Program	Semester Hours
Required and Suggested Supporting Courses (listed above).....	90
E7-8, Business Readings or T3-4, Thesis.....	5
Occupational Experience.....	30
Total Requirements for the Degree.....	125

Requirements for the Degree of Associate in Law and Business

Four-Year Program

This program requires a total of 60 semester hours. It comprises all of the required courses listed above.

Engineering and Management Program

Leading to the Degree of B.B.A. in Engineering and Management

The Engineering and Management curriculum offers basic training by combining fundamental courses in engineering and business. It provides reliable training for those now engaged in or who plan to enter positions of managerial responsibility in commercial or industrial enterprises where a technical background is required.

Many technically trained men find the need for the knowledge of fundamental management principles as they assume opportunities of greater managerial responsibilities. On the other hand, many business trained men are employed in industrial plants where a technical background is most desirable, if not necessary, for advancement. This program has been developed to serve both groups.

The engineering requirements may be satisfied by graduation from an engineering college. The School of Business in conjunction with the evening Lincoln Technical Institute, an affiliated school of Northeastern University, offers a six-year program leading to the degree of Bachelor of Business Administration in Engineering and Management.

The basic requirements of thirty semester hours of courses in Management plus Business Readings must be completed with the School of Business which awards the degree of Bachelor of Business Administration in Engineering and Management. The courses are largely related to the field of Industrial Management and are designed to supplement the Engineering program completed by the student.

Requirements for the Degree of Bachelor of Business Administration in Engineering and Management

Course Numbers	Courses	Semester Hours
	Engineering Courses (minimum requirements)	60
	*Management Courses	
A 5-6	Accounting for Management	5
A 21-22	Cost Accounting for Management	5
M 13	Work Simplification I	2½
M 14	Time Study I	2½
M 28	Job Analysis and Evaluation	2½
M 57	Materials Handling	2½
M 3	Principles of Production	2½
M 16	Production Planning and Control	2½
E 1-2	Business English	5
Ec 1-2	Business Economics	5
M 36	Industrial Safety	2½
Ec 7	Statistics	2½
M 6	Purchasing	2½
M 22	Labor-Management Relations	2½
M 37	Quality Control	2½
M 45	Traffic Management	2½
M 9-10	Management Problems and Policies	5
	Total required	30
E 7-8	Business Readings	5
	Occupational Experience	30
	Total Semester Hours Required for Degree	125

*The courses indicated in heavy type are required for all students who have not previously taken these courses. The remainder of their programs may be selected from the courses listed above or other suitable courses in consultation with the dean.

Institute of Insurance

Designed to meet a demand for a practical approach to the basic principles and practices of current procedures and operations in the field of insurance, the Institute of Insurance offers an integrated program of courses, each closely interrelated with the appropriate policy forms, endorsements and manuals.

These courses should prove of especial value to office workers in insurance companies as a preparation for advancement or for those who may be employed as or who plan to train to become agents, brokers, fieldmen or underwriters.

The complete program including thirty (30) semester hours may be completed in two academic years. The courses will include those listed below as required courses, plus other elective courses to make a total of thirty (30) semester hours.

Required Courses

<i>Course Numbers</i>	<i>Courses</i>	<i>Semester Hours of Credit</i>
M 25-26	Casualty Insurance	5
M 48-49	Fire and Allied Lines	5
M 50	Inland Marine Insurance	2½
M 46-47	Life Insurance	5
M 53-54	Fidelity and Surety Insurance	5

Elective Courses

A 5-6	Accounting for Management	5
Ec 1-2	Business Economics	5
L 13, 14, 15	Business Law I, II and III	7½
Ec 7	Business Statistics	2½
Ec 3-4	Financial Organization	5
M 36	Industrial Safety	2½
D 3	Principles of Selling	2½
E 5	Public Speaking	2½

B.B.A. Degree in Management

Credits earned in any of the above courses may be applied toward the ninety (90) semester hours required for the B.B.A. Degree in Business Management as shown on page 26. Students registering for this program should consult with the dean to arrange a program of courses which will most adequately satisfy their training needs.

Institute of Retailing

Rapid changes have come about in the distribution of merchandise. This is especially true in the retail store phase of the field. During recent years, many factors such as rapidity of style changes, the increase in size of retail stores, and the keenness of competition have helped to make the management of a retail business more complex and difficult. Progressive stores have already done considerable in the nature of applying the scientific approach to some of these problems. In such a fast moving field, the store management is constantly in search of those who are qualified through adequate training and experience to assume responsibility and authority.

The courses included in the Institute of Retailing are designed to provide an integrated program of study for men and women who desire to train for positions of managerial responsibility in the field of retailing. Students may register for single courses or for the complete programs leading to

- I. The Certificate
- II. The Degree of Associate in Management
- III. The Degree of Bachelor of Business Administration in Management

I. The Certificate Program

The Certificate requires the completion of the thirty (30) semester hours of credit in the Required Courses listed as follows:

Required Courses		
<i>Course Numbers</i>	<i>Courses</i>	<i>Semester Hours of Credit</i>
Ec 1-2	Business Economics	5
D 1-2	Marketing Principles	5
D 3	Principles of Selling	2½
D 8	Retail Store Merchandising	2½
D 5	Advertising Principles	2½
D 6	Retail Store Advertising	2½
D 12	Retail Buying	2½
D 13	Retail Credit	2½
D 7	Retail Store Management	2½
D 14	Display Techniques	2½
		30

II. The Degree of Associate in Management

The Associate Degree may be earned by completing a total of sixty (60) semester hours. In addition to the above thirty semester hours of required courses, the student must complete thirty semester hours of additional credit in courses chosen in consultation with the dean.

III. B.B.A. Degree in Management

Students wishing to apply credits in either of the above programs toward the B.B.A. Degree should consult with the dean who will arrange a program of courses to meet the degree requirements, allowing specialization in the field of retailing.

SPECIAL COURSES

Each year special courses will be offered in specific aspects of retailing. Many of these courses will be accepted for degree credit as elective courses.

Institute of Transportation and Traffic Management

Transportation as a phase of the distribution of raw materials and processed merchandise is assuming a degree of major importance in our American economy. The flexibility of the trucking industry is changing many of our concepts of inventories and methods of operation. This, plus the cost factor, requires effective management of the handling and shipment of goods.

This integrated program of courses is designed to prepare the student for the Practitioner's Examination given twice yearly by the Interstate Commerce Commission, certification in which qualifies one to present cases and represent clients before the Commission.

Certificate Program

To qualify for the certificate a student must complete the following required courses, plus a sufficient number of elective courses to make a total of thirty (30) semester hours.

Required Courses		
Course Numbers	Courses	Semester Hours of Credit
M 44	Principles of Transportation	2½
M 45	Traffic Management	2½
M 61-62	I.C.C. Practice and Procedure	5
M 65-66	Rates and Tariffs	5
Elective Courses		
M 63	Motor Carrier Operations	2½
M 67-68	Motor Carrier Accounting	5
A 5-6	Accounting for Management	5
Ec 1-2	Business Economics	5
L 13, 14, 15	Business Law I, II and III	7½
M 25-26	Casualty Insurance	5
L 16	Government Controls in Business	2½
M 51-52	Inland Marine Insurance	5

B.B.A. Degree in Management

Credits earned in any of the above courses may be applied toward the ninety (90) semester hours required for the B.B.A. Degree in Business Management as shown on page 26. Students registering for this program should consult with the dean to arrange a program of courses which will most adequately satisfy their training needs.

Labor Relations Institute

The management of labor relations presents the most vital and challenging aspect of our industrial development of the immediate future. Continuance of our American way of industrial democracy demands a harmonious understanding of the underlying principles of labor and industrial management for the peaceful adjustment of their common problems.

The Labor Relations Institute of Northeastern University was organized to serve this need. It is dedicated to the service of both labor and management. It directly concerns the work of industrial and labor executives, plant managers, personnel directors, union shop councillors and stewards.

Required Courses

LABOR-MANAGEMENT RELATIONS—The history and development of Collective Bargaining.

LABOR LEGISLATION I—Industrial Relations, Government Agencies.

THE LABOR CONTRACT—Negotiation and Administration.

LABOR RELATIONS SEMINAR.

Elective Courses

ACCOUNTING AIDS TO MANAGEMENT

CONFERENCE LEADERSHIP

GRIEVANCE ANALYSIS AND PROCEDURE

INDUSTRIAL PSYCHOLOGY

INDUSTRIAL SAFETY

JOB EVALUATION, MERIT RATING

JOB RELATIONS AND SUPERVISORY TRAINING

LABOR LEGISLATION II

WORK SIMPLIFICATION I

WORK SIMPLIFICATION II

PERSONNEL ADMINISTRATION

PSYCHOMETRIC TESTING IN INDUSTRY

PUBLIC SPEAKING

TIME STUDY I

TIME STUDY II

WAGE ADMINISTRATION

Students may register for the complete program or may take any one or more of the courses which serve their particular needs. They may complete the entire program by attending two evenings per week for two years. Each individual course is one semester or seventeen weeks in length and carries two and one-half semester hours of credit for students qualified for the degree programs of Northeastern University Evening School of Business.

Advisory Committee

The Advisory Committee to the Labor Relations Institute is composed of representatives of labor, management, and public agencies. They were chosen on the basis of their leadership in the field, their broad-minded approach to labor-management problems, and their interest in education as a means of developing better relationships.

DR. A. HOWARD MYERS, *Chairman*

BERNARD M. ALPERT, Regional Director
National Labor Relations Board

J. WILLIAM BELANGER
Textile Workers of America

OSCAR B. BENSON
Industrial Relations Department
Boston Edison Company

JACOB BLUME
Amalgamated Clothing Workers of
America

ALBERT COULTHARD, Commissioner
Massachusetts Labor Relations Commission

JAMES J. HEALY, Labor Arbitrator
Former Assistant N. E. Regional Director
War Labor Board

KENNETH KELLEY, Secretary-Treasurer
Massachusetts State Federation of Labor

ANDREW C. KUHN
Director of Industrial Relations
Stop and Shop, Inc.

E. ROBERT LIVERNASH
Industrial Relations Manager
J. F. McElwain Company

WENDELL D. MACDONALD, Regional Director
Bureau of Labor Statistics, U. S. Department of Labor

JAMES NELSON, Assistant Regional Director
U. S. Department of Labor

GEORGE E. ROEWER, Attorney

JOSEPH A. SMITH, Personnel Director
American Woolen Company

Office Management Institute

The profession of office management has developed rapidly in scope and status in response to the technical and diversified nature of the problems arising and the current trends toward the scientific approach to the solutions of these problems. Heretofore, the efforts toward simplified work procedures have been related primarily to the plant ends of production. Its extension to office procedures is vital to the necessary reduction of the ever-mounting overhead created by increased costs.

The Office Management Institute is designed to serve those already employed in the field by providing instruction necessary for simplification and standardization of their operational tasks. The courses should have an appeal for systems analysts, accountants, office managers, sales managers, engineers, comptrollers, etc. It also provides a formal and planned program of training for those intending to make their careers in this profession.

The student may select an individual course, complete the requirements of the Certificate Program, or use the credits earned toward the B.B.A. Degree.

THE CERTIFICATE PROGRAM

The Certificate requires the completion of thirty (30) semester hours of credit from courses selected from those listed below:

Required Courses

SCIENTIFIC MGT. IN OFFICE PRACTICE	2½	OFFICE ORGANIZATION AND ADMINISTRATION	2½
FORMS DESIGN AND CONTROL	2½	OFFICE SYSTEMS AND PROCEDURES	2½
ACCOUNTING FOR MANAGEMENT (or equivalent)	5	TECHNIQUES OF SUPERVISION	2½

Elective or Related Courses

BUSINESS ENGLISH	LABOR-MANAGEMENT RELATIONS
BUSINESS CONFERENCES	PERSONNEL ADMINISTRATION
COST ACCOUNTING FOR MANAGEMENT	STATISTICS
	WAGE ADMINISTRATION

B.B.A. Degree in Management

Credits earned in any of the above courses may be applied toward the ninety (90) semester hours required for the B.B.A. Degree in Business Management as shown on page 26. Students registering for this program should consult with the dean to arrange a program of courses which will most adequately satisfy their training needs.

School of Business

Description of Courses

THE UNIVERSITY reserves the right to withdraw, modify, or add to the courses offered, or to change the order of courses in curricula as may seem advisable.

The University further reserves the right to withdraw in any year any elective or special course for which less than twelve enrollments have been received. Regular students so affected by such withdrawal will be permitted to choose some other course. In the case of special students, a full refund of all tuition and other fees will be made.

The University also reserves the right to change the requirements for graduation, tuition and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

All full-year courses are numbered with a double consecutive number and all half-year courses with a single number. The letter or letters immediately preceding the numbers indicate the classification of the course. The number of class sessions indicated for each course includes the final examination session. All full-year courses will have mid-year examinations and course credit will be granted on a semester basis.

ACCOUNTING (A)

Applicants for admission to the School who have had experience in accounting or bookkeeping or who have pursued systematic courses in institutions of less than college grade may take an examination for placement purposes in Introductory Accounting. Those who pass this examination will be admitted to Intermediate Accounting and may substitute an elective course in lieu of Introductory Accounting.

A 1-2 INTRODUCTORY ACCOUNTING

This course provides basic instruction for those who plan to specialize in accounting or for those who wish to enroll later for more advanced courses. Emphasis is placed upon proprietorship accounts, including books of entry, statements, business practices, adjustments, and an introduction to partnership accounts. Drill and practice work are required for proficient handling of simple accounting transactions.

No previous knowledge of bookkeeping or accounting necessary

5 semester hours credit

A 3-4 INTERMEDIATE ACCOUNTING

A study of partnership accounting, including organization, dissolution, and liquidation of the partnership, emphasis being given to the corporate form of accounts with attention to manufacturing and trading activities. In addition to the drill and practice work on accounting technique, a mastery of basic principles of general accounting is required.

(Prerequisite, A 1-2)

5 semester hours credit

A 5-6 ACCOUNTING FOR MANAGEMENT

A study of the broad background of accounting and business transactions so as to enable the student to analyze and interpret intelligently financial statements and other accounting reports. The course demonstrates the use of accounting in management and financial control. Emphasis is placed on the development of accounting fundamentals, preparation of financial statements, corporation and manufacturing accounts, evaluation of balance sheet items, analysis and interpretation of financial statements and other trends, and the use of accounting as an aid to management.

No previous knowledge of bookkeeping or accounting necessary

5 semester hours credit

A 7-8 ACCOUNTING PROBLEMS

This course is designed to develop the student's reasoning power and his ability to apply the proper accounting principles in solving a specific problem. Emphasis is placed on principles and their application rather than on individual situations. Subjects covered are the preparation of financial statements, accounting for and valuation of cash items, receivables, inventories, liabilities, and net worth accounts. Capital stock, treasury stock, and surplus are discussed in detail.

(Prerequisite, A 3-4)

5 semester hours credit

A 9-10 COST ACCOUNTING

Acquaints the student with the relationship of cost accounting to management and administration control and shows how adequate cost systems may further the intelligent management of business enterprises. Numerous problems serve as the basis for a study of the various accounts, records, systems, and methods commonly used in modern cost accounting.

(Prerequisite, A 7-8)

5 semester hours credit

A 11 AUDITING

This course covers both theory and practice of auditing, discussion being supplemented with problems and questions on balance sheet audits. Procedure in verifying cash, receivables, inventories, investments, tangible and intangible fixed assets, deferred charges, liabilities, and net worth accounts is covered. An audit report is prepared.

(Prerequisite, A 7-8)

2½ semester hours credit

A 12 AUDIT PRACTICE

For students who intend to enter the public accounting or internal auditing fields. A practice audit by independent accountants is conducted, and procedures compared with those of internal auditors. Preparation of adequate working papers is emphasized.

(Prerequisite, A-11)

2½ semester hours credit

A 13-14 INCOME TAX PROCEDURE

A detailed study is made of Federal and State tax laws, their administration and application to the incomes of individuals, partnerships, corporations, and fiduciaries; treasury and tax department regulations and rulings; and of the decisions of the Board of Tax Appeals, and of various Federal and State courts. Practice in making out reports and returns, and a study of the procedure of handling claims form the basis of applied instruction.

(Prerequisite, A 3-4)

5 semester hours credit

A 15 CONSTRUCTIVE ACCOUNTING

To acquaint students with the principles underlying the construction of accounting systems and the procedure of system installation. The course is developed by means of problem projects beginning with an analysis of the accounting needs of a small business. By gradual steps increasingly larger businesses are studied and accounting systems developed to meet their needs. Special attention is given accounting records in relation to the expansion of the accounting system.

(Prerequisite, A 7-8)

2½ semester hours credit

A 17-18 ADVANCED ACCOUNTING PROBLEMS

This course is designed primarily to meet the requirements of students intending to enter the accounting profession. Application of accounting principles to special situations such as insolvent companies, estates and trusts, stock brokerage houses, public utilities, and municipalities. Considerable time is spent on preparation of consolidated statements.

(Prerequisite, A 7-8)

5 semester hours credit

A 19-20 C.P.A. PROBLEMS

A complete review of the theories encountered in A 7, 8, 9, 10, 17, 18. This course is designed primarily for students intending to take the state C.P.A. examinations. Considerable practice is required, using largely problems from previous C.P.A. examinations. Emphasis is placed on the technique of adequate problem solutions.

(Prerequisite, A 9-10; A 11; A 13-14; A 17-18; L 13, 14, 15)

10 semester hours credit

A 21-22 COST ACCOUNTING FOR MANAGEMENT

Increasing emphasis on the cost factors of production and distribution necessitates a fundamental knowledge of cost procedures on the part of every student training for management responsibilities. This course is designed to provide a practical and thorough coverage of basic cost procedures related to materials, labor and manufacturing expense control, and their integration with general manufacturing accounts. Job order, process and standard cost systems are studied.

(Prerequisite, A 5-6)

5 semester hours credit

A 23 PUBLIC ACCOUNTING

The work of the professional independent public accountant. Organization of the accountant's office; division of work between principal, senior and junior; organization of working papers. Problems of a small practice discussed as well as those of the large organization. Responsibility of auditor to client, to third parties, to regulatory bodies covered. Ethics of the profession. Recent auditing literature.

(Prerequisite, A 11-12)

2½ semester hours credit

A 24 BUDGET PROCEDURE

Procedure in carrying out budget policies. Various budgets are discussed and illustrated; sales; production; purchases; manufacturing expenses; administrative expenses; financial; comparison of budget with financial statements at end of budget period; revision of budget.

(Prerequisite, A 7-8)

2½ semester hours credit

A 25 MATHEMATICS OF ACCOUNTING

Mathematical computations required in business practice and in C.P.A. examinations are covered. Considerable practice material is assigned to develop facility and accuracy in mathematics.

Arithmetical computations: Percentages, averages, interest, discounts, partial payments, installment sales, valuation of good will, logarithms.

Algebraic computations: Tax and bonus problems, determination of net worth of inter-owned companies.

Actuarial science: Compound interest, compound amounts and present values; ordinary annuities and annuities due; sinking fund computations; debt amortizations; effective interest on bonds.

Depreciation: Sinking fund, annuity, fixed percentage of diminishing value, and composite rate methods.

(Prerequisite, A 7-8)

2½ semester hours credit

A 27 ENGLISH FOR THE ACCOUNTANT

This course is designed to promote facility of expression in accounting work. Considerable practice is required in writing answers to questions on accounting theory and in preparation of reports. Emphasis is placed on use of good grammar, complete and concise expression, and in writing so that statements cannot be misunderstood.

2½ semester hours credit

A 28 EXECUTIVE ACCOUNTING

An advanced course in the work of the comptroller and work of the treasurer. Organization of the comptroller's office; objectives to be served by the accounting system; preparation of routine and special reports; interpretation of reports; accounting aspects of duties of the treasurer.

(Prerequisite, A 17-18)

2½ semester hours credit

A 34 INTERNAL AUDITING

This course undertakes a study of the function of the internal auditor in ascertaining the degree of reliability of accounting and statistical data developed within the organization, the extent to which company assets are properly accounted for and safeguarded from loss, and the extent of compliance with established policies, plans, and procedures. The internal auditor's review and appraisal of the accounting, financial, and other policies and plans of the organization as a basis for protective and constructive service to management are covered. The development of working papers and writing of the report are studied and problems of human relations with personnel in other departments discussed.

(Prerequisite, A 11)

2½ semester hours credit

A 35 ANALYSIS OF FINANCIAL STATEMENTS

This course covers analysis of financial statements for the purpose of establishing credit ratings, determining the investment value of a business, testing efficiency of operations, and determining whether financial and operating policies, methods, and practices should be continued or changed. Financial statements of industrial concerns, air carriers, railroads, public utilities, and banks are specifically studied.

(Prerequisite, A 7-8)

2½ semester hours credit

MARKETING (D)

Marketing enters into and influences every field of business and includes not only the direct process of the sale of goods, but the whole organization by which goods find their way from the original producer to the ultimate consumer. The change in the economic structure during the past ten years, growing out of higher standards of living, the development of new occupational interests, and the shift of population to large cities, has tended to increase the cost of marketing of goods. Just as the elimination of waste in production was the keynote of business fifteen years ago, the reduction of expense and the introduction of more efficient methods in distribution are the foremost thought of business leaders today. For this reason courses in marketing form one of the basic elements in a business education.

D 1-2 MARKETING

An understanding of the various methods in common use for selling goods and of the typical problems that arise in the course of distributing goods from the manufacturer through the middlemen and dealers to the consumers is provided. The selling problems of the manufacturer, the wholesaler, the retailer, and the specialty agent are studied in relation to the various types of industries and commodities.

5 semester hours credit

D 3 PRINCIPLES OF SELLING

This course deals with the evolution of modern salesmanship, its history, development, and opportunities. The psychology of selling, preparation for the interview, the proper approach, arousing the buying urge, the meeting of sales resistance, the closing of the sale, and the qualities of good salesmen are among the topics discussed.

2½ semester hours credit

D 4 SALES MANAGEMENT

This is a continuation of the course in the Principles of Selling. It includes study of the types of sales organizations, the work of sales executives, sales planning and policies, sales campaigns, management of the sales force, financing of sales, and the control of sales operations.

(Prerequisite, D 3)

2½ semester hours credit

D 5 PRINCIPLES OF ADVERTISING

A comprehensive course designed to familiarize the student with the nature and scope of advertising and its place in the commercial and economic structure. History, definition, and functions of advertising. Organization and functions of advertising departments and advertising agencies. Varieties of advertising and media. Problems, market investigation, planning campaigns. Laws, ethics, and regulations. A study of the broader aspects of advertising with special emphasis on current trends and developments.

2½ semester hours credit

D 6 RETAIL STORE ADVERTISING

This course is devoted to the study of the elements of retail advertising. The various media used by retailers are considered with drill in the preparation of copy therefor. A study is made of institutional, straight merchandise and sales copy as exemplified in current advertising of important retail concerns. The principles of layout receive attention as well as the mechanics of production including art work, plates, typography, and printing. The aim is to furnish a practical foundation fitting students for a creative career in retail advertising.

(Prerequisite, D 5)

2½ semester hours credit

D 7 RETAIL STORE MANAGEMENT

Development of modern retail organizations, including smaller and larger retail stores, store location and layout, wage payment methods, selling services, receiving and marking procedures, mail and telephone orders, adjustments, delivery of merchandise, retail accounting and control, and store protection and maintenance.

2½ semester hours credit

D 8 RETAIL STORE MERCHANDISING

This course presents the fundamental principles of retail store merchandising, including purchase planning, receiving and marking merchandise, pricing, markups and mark-downs, merchandise inventories, turnover, merchandising policies, publicity budget and plans.

2½ semester hours credit

D 9 ADVERTISING PROBLEMS

A course designed to bring to the student the intimate details of planning an advertising campaign; the solving of advertising objectives; and the planning of advertising strategy. Numerous actual case histories are covered in classroom discussion with particular emphasis on the latest advertising trends and practices.

2½ semester hours credit

D 10 SALES PROMOTION

The function of sales promotion; the development of plans and materials for stimulating sales; the consideration of publicity media; the preparation of direct advertising pieces for use among the sales force of the manufacturer or wholesale distributor; functions and uses of direct advertising, direct-mail advertising and radio advertising; the planning of sales campaigns; co-ordinating advertising and sales efforts; the preparation of sales manuals, display techniques, portfolios, etc., for use of the sales force.

(Prerequisites, D 1-2, D 3, D 5)

2½ semester hours credit

D 11 MARKET RESEARCH

This course deals with the techniques of research investigations in the collection and utilization of data relating to the problems of marketing. It includes the planning of mail and field investigations, preparation of material, testing results, interpretation of findings, preparation of reports leading to the development of new products, sales methods or sales areas.

(Prerequisites, D 1-2, D 5, Ec 7)

2½ semester hours credit

D 12 RETAIL BUYING

The buyer in relation to the merchandise organization, determining customer demands; sources of information; sources of supply, major markets; market representation and resident buying; co-operative and central buying; foreign buying; techniques of buying; legal aspects; brands and labeling; trade practices and regulations.

2½ semester hours credit

D 13 RETAIL CREDIT

Organization of the Credit Department; originating the charge account; passing on the applicant; the Retail Credit Bureau; mercantile agencies; credit procedures; collection procedure; installment credit; contracts; negotiable instruments; legal aspects of credit; bankruptcy.

2½ semester hours credit

D 15 ADVERTISING COPY

A course designed to furnish essential groundwork for successful copy writing. Includes study of market-analysis, product and consumer research; class discussion of and participation in comparisons of media and methods, from the standpoint of the copy writer; drill and practice in writing specific industrial, general, retail, radio and mail-order advertising copy; development of techniques, vocabulary and facility.

(Prerequisite, D 5)

2½ semester hours credit

D 16 ADVERTISING PRODUCTION

The methods and techniques of advertising production, including layouts; use of illustrations; the development of typography; types and type selection; composition; engraving processes; the several printing processes, including letterpress, lithography, and gravure; specifications and estimates.

(Prerequisite, D 5)

2½ semester hours credit

D 19-20 PRINCIPLES AND PRACTICES OF FOREIGN TRADE

The course is designed to introduce the student to world trade, its development and current status, the economic and political developments which affect the volume and direction of the flow of goods. Subjects discussed are the balance of international payments; trade agreements; tariff and non-tariff control measures and policies; export and import departments; middlemen; foreign agents and distributors; branch houses; Webb-Pomerene Associations; cartels; study and choice of markets; settlement of trade disputes; international banking facilities, foreign credits; foreign exchange; foreign investments and foreign exchange. The execution of foreign trade documents will be carried out throughout the course.

5 semester hours credit

D 21 LEGAL ASPECTS OF FOREIGN TRADE

A survey course of commercial law for foreign traders. It is concerned with the common legal problems in international trade. The background and development of Anglo-American and civil (or continental) legal systems are considered. The law merchant; sales; letters of credit; contracts; partnerships; taxation; bankruptcy and insolvencies; powers of attorney; trademarks, designs and commercial names; types of business organization, partnership, business corporations, and their counterparts in foreign countries; legal procedure; international trading combinations; history and background of American customs duties; customs officials and procedure in the collection of duties, American customs courts, foreign trade zones and ports; methods of settlement of trade disputes are covered.

2½ hours semester credit

ECONOMICS (Ec)

Economics is the basic foundation upon which the general principles of business as a science are founded. A mastery of the underlying economic laws enables the student to see clearly the forces which business men must use in arriving at solutions to their problems. An appreciation and understanding of economics is a necessary factor in the equipment of a progressive business man.

Ec 1-2 BUSINESS ECONOMICS

The characteristics of modern business and industry are studied in terms of their operations and relationship to the modern economic system. Economic laws and principles are considered in terms of business conditions peculiar to our own time and country and how these laws govern prices, wages of labor, profits, credit, competition, work and working conditions, and rewards for business enterprise.

5 semester hours credit

Ec 3-4 FINANCIAL ORGANIZATION

The objective of this course is to provide the student with a knowledge of the basic financial principles and problems involved in the management of a business, including financial instruments, institutions, capital structure, re-financing, working capital management, credit, reorganization and control.

(Prerequisite, Ec 1-2)

5 semester hours credit

Ec 5 INVESTMENT PRINCIPLES

Consideration is given to the determination of investment policies based upon knowledge of mathematics and mechanics of investments, financial institutions, the various kinds of securities such as bonds, preferred and common stocks, government obligations, investments in real estate and foreign investments.

(Prerequisite, Ec 3-4)

2½ semester hours credit

Ec 6 SECURITY ANALYSIS

Classification of securities; fundamental elements in security analysis, quantitative and qualitative factors; sources of information; fixed value investments; securities with speculative features; common stock investments; the earning factor in common stock evaluation; balance sheet analysis; discrepancies between price and value.

(Prerequisite, Ec 5)

2½ semester hours credit

Ec 7 STATISTICS

The objective of this course is to train the student to use statistics in analyzing business problems. The point of view of the business man and not the professional statistician is maintained throughout the study. It includes the collection, tabulation, refinement, and presentation of statistical data; its interpretation through statistical distributions, measurement of central tendency and dispersion, index numbers and correlation.

(Prerequisite, Ec 1-2)

2½ semester hours credit

Ec 15-16 APPLIED SECURITY ANALYSIS

This course is designed to acquaint the student with methods used by practicing security analysts in their studies of various industries and to provide practical information useful in future analysis of companies operating in these industries. It includes review of basic principles of Security Analysis; tools used by practicing analysts; analytical study of various industries comprising our economy, including the major consumer goods, capital goods, service industries, public utilities and railroads. Practicing analysts who are specialists in their respective industries will comprise the faculty. These instructors will develop the problems affecting their industries, the methods used in appraising their outlook, and the approaches to the problems of analyzing the securities of individual companies within these industries.

(Prerequisite Ec 6)

5 semester hours credit

Ec 17 ECONOMIC GEOGRAPHY

This course is concerned with the role of geography, geology, and climatology in determining the centers of population, the location of natural resources, and the development of agriculture and industry. It considers their location in terms of their natural relationship to the flow of world trade. The socio-economic principles that underlie the development of resources in different countries and climates are emphasized. It also analyzes the political-economic aspects of resource distribution and development in the form of trade and world relationship.

2½ semester hours credit

Ec 19 INTERNATIONAL ECONOMICS

This course attempts to analyze foreign trade and finance in terms of current practices and theories. It discusses national welfare and foreign trade; international accounting and what the balance reveals; the making of international payments and documents used; the rate of exchange; international equilibrium; foreign trade and the national income; principles behind protection; trade control through the tariff, import quotas, exchange control and their evaluation; international commodity agreements and commercial treaties; monetary policy problems; the international gold standard; exchange reserve standards; exchange stabilization fund; the shortage of dollars; the International Monetary Fund; international investments.

2½ semester hours credit

ENGLISH (E)

The value that comes from the effective use of good English in business reports and communications is being increasingly emphasized by business leaders. All students who are candidates for the degree or certificate are required to pursue systematic courses in English. Those having outstanding deficiencies may be required to take additional courses in English.

E 1-2 BUSINESS ENGLISH

Efficient training is provided in the use of correct and forceful English for business purposes. Practice in the construction of sales, collection, credit and application letters, business articles, reports and newspaper stories provides opportunities for written expression on business topics. Study is devoted to the elements of logic as related to the organization and expression of thought. The course includes study of the fundamentals of sales promotion practice with special emphasis on buying motives. Oral work in class is intended to prepare students for participation in business conferences and public meetings.

5 semester hours credit

E 3-4 ADVANCED ENGLISH

Literature of value and interest to business men forms the basis of study and practice in writing so as to develop an effective, easy style of expression. The student acquires a cultural basis which will serve not only as a source of entertainment in leisure hours but also an aid for business communications.

(Prerequisite, E 1-2)

5 semester hours credit

E 5 PUBLIC SPEAKING

Those who wish to speak convincingly, to overcome self-consciousness, and to develop self-confidence will find this course meeting their needs. Students are trained in the selection and organization of speech materials, the delivery of the speech, and in other important essentials of effective speaking. The entire course is practical and not theoretical. Work is centered around the interests and topics of business men and is specifically adapted to their needs.

2½ semester hours credit

E 6 BUSINESS CONFERENCES

The management of modern business is conducted to a large extent through the use of conferences. The objective of this course is to present techniques basic to group leadership. It provides instruction in the planning, participation and leading of conferences. Classes are limited in size to allow regular and frequent participation by students. The conference topics are carefully designed so that the discussions are means of disseminating very worthwhile information regarding business management problems.

2½ semester hours credit

E 7-8 BUSINESS READINGS

The two courses in Business Readings are designed to broaden the student's acquaintance with selected writings in the field of business and to introduce him to the real pleasure and values that come from such reading. There are no required lectures for these courses, each of which carries two and one-half semester hours credit and for which a charge of ten dollars is made.

At the beginning of the Upper Middler and the Junior years, each degree candidate registers for a Readings course and is furnished a list of titles from which he makes selections for readings in accordance with the course requirements. Written reports are submitted on these readings, and are due on or before registering for classes the following year.

5 semester hours credit

E 9-10 INDUSTRIAL JOURNALISM

Basic news gathering and writing. Assignments and deadlines. Copyrights and credits. Publicity vs Propaganda. Trade publications and their functions. Horizontal and vertical coverage. Writing for business papers. House organs — internal and external. Reproduction processes. Use of color. Preparation of manuscript for printer.

5 semester hours credit

LAW (L)

Underlying the ever-increasing complexity of modern business is a growing body of law which defines and directs business operations.

L 5-6 CONTRACTS

Contracts: their importance to the business man in the everyday conduct of his affairs, why contracts are necessary, how they are made and enforced; the subject matter of contracts; the rights and liabilities of the parties; the termination of contractual relationships.

5 semester hours credit

L 7-8 CORPORATIONS, PARTNERSHIPS, AGENCIES

Problems of organizing various businesses, the forms of business enterprises; the powers and liabilities of business organizations and their officers; inter-corporate problems; rights of creditors and stockholders; reorganization and termination of a business organization's affairs. Agency: the function of agents in present-day business; the legal relationships among agent, employee and third parties; the duration of agency relationship and methods of termination.

(Prerequisite, L 5-6)

5 semester hours credit

L 9 LAW OF SALES

Transfer of property interest in goods; nature of sales contracts; Statute of Frauds; seller's warranties; rights and remedies of sellers and buyers; unfair and illegal market practices such as infringements of trademarks, disparagement of competitors, etc.

(Prerequisite, L 5-6)

2½ semester hours credit

L 11 NEGOTIABLE INSTRUMENTS

Legal devices for raising money and extending credit, such as promissory notes, bills of exchange, checks, trade acceptances, bills of lading, warehouse receipts; formal requisites of negotiable paper; negotiation; discharge rights and defenses.

2½ semester hours credit

L 12 SECURITY TRANSACTIONS — INSOLVENCY

Study of mortgages; pledges; conditional leases and trust mortgages; assignments for benefit of creditors; corporate organizations; bankruptcy.

2½ semester hours credit

L 13 BUSINESS LAW I

Contracts: nature, kinds and formation of contracts; essential elements; form and interpretation of contracts; breach, remedies and damages. Agency: nature, purpose and formation of agency relationship; rights and duties of principal and agent, scope of agent's authority; rights and duties of principal and third persons; termination of agency. Employer and employee: compensation laws; duties of master; contributory negligence doctrine; injuries to third persons.

2½ semester hours credit

L 14 BUSINESS LAW II

Negotiable instruments: bills, notes and checks; requirements of a negotiable instrument; negotiation; liabilities and defense of parties; procedure upon dishonor; discharge. Bailments: nature and kinds; rights and duties of parties; carriers; documents of title. Sales: nature of sales contracts; warranties; transfer of title; rights and remedies of seller and buyer. Insurance: formation and function of insurance contract; kinds of policies; legal phases of life, property and other insurance. Suretyship: rights of the surety and the guarantor; rights and duties of the creditor; defenses of the surety and guarantor.

2½ semester hours credit

L 15 BUSINESS LAW III

Partnerships: nature, kinds and formation; rights and duties of partners; partner's authority to bind firm; relation of partners and third persons; dissolution and winding up. Corporations: nature and creation; charter; powers, rights and liabilities; nature and kinds of capital stock; rights and liabilities of stockholders; directors and officers. Mortgages: rights and duties of mortgagor; rights and duties of mortgagee; rights after default. Property: landlord and tenant relationship; classification of tenancies; rights and duties of landlord; rights and liabilities of tenant. Bankruptcy: Federal Bankruptcy Act; acts of bankruptcy; adjudication; rights and duties of bankrupt; unsecured, secured and priority claims; extensions, compositions, and other debtor-relief provisions; discharge.

2½ semester hours credit

L 16 GOVERNMENT CONTROLS IN BUSINESS

A study of the economic and political relationships which exist between business and government with particular reference to the Sherman Act and Anti-Trust Laws; Securities and Exchange Commission; Interstate Commerce Commission; regulation of public utilities; the Co-operative Movement; the Social Security Act; government and labor; business regulation by taxation.

2½ semester hours credit

MANAGEMENT (M)

With the complex and rapidly changing conditions of modern business, the functions of administration and management must be clearly defined and maximum economies effected. Through the problem approach, these courses train the student to supplant guesswork and trial and error processes with organized knowledge and proven management methods.

M 3 PRINCIPLES OF PRODUCTION

A basic treatment of the fundamental manufacturing processes. Topics studied include factory organization, manufacturing and assembly sequences, selection and co-ordination of productive facilities, product design, inspection and salvage.

2½ semester hours credit

M 5 PSYCHOLOGY FOR BUSINESS AND INDUSTRY

Business psychology is the study of predicting and influencing human behavior in business. It provides an understanding of man's mental life, of how the individual and the group behave and are influenced in their behavior, and of how the business man may predict and control his own behavior and that of those with whom he works. The study and analysis of the student's own personal problems and behavior constitute a valuable and interesting phase of the course.

2½ semester hours credit

M 6 PURCHASING

A practical study of the functions and duties of the purchasing agent, the organization and administration of his department, and his relations with other departments. The following are representative of subjects discussed: the purchasing function, qualifications of the purchasing agent, selection of supply sources, purchasing policies and budgets, cataloguing information, testing and inspection of purchases, and stores control.

2½ semester hours credit

M 7 CREDITS

This course furnishes instruction in the organization and functions of the commercial credit department; the classification of credit and the several types of agencies involved; the factors involved in a credit risk; the investigation of credit factors; credit services; financial statement analysis and interpretation as a basis of credit; the insolvent account; bankruptcy; adjustment bureaus.

2½ semester hours credit

M 9-10 INDUSTRIAL MANAGEMENT PROBLEMS AND POLICIES

Co-ordination of the functional relationships which exist between the different departments of business with the problems affecting the determination of administrative and managerial policies is the purpose of this study. Special attention is given to scientific management of industry and business and to the co-ordination of production with purchasing, sales, finance, and transportation. Cases and problems dealing with organization and expansion, consolidation and combinations, reorganizations, internal administration, industrial and human relations, and governmental control form the basis of discussion and study.

5 semester hours credit

M 13 WORK SIMPLIFICATION I

The course is designed to present the fundamental principles underlying motion analysis and work simplification. Included in the subjects considered are the following: Process and operation analysis through the use of process charts, flow diagrams, operation charts, man-and-machine charts, micromotion study, principles of motion economy. Work place layout, labor-saving tools and equipment, laboratory development work. Elementary time study. Setting up synthetic standards using elemental time values. Wage incentives, problems involved in the introduction of work simplification with particular emphasis upon employee morale.

2½ semester hours credit

M 14 TIME STUDY I

Based upon the best established methods procedures, the fundamental principles of time study are considered as a basis for standardization. Subjects included in the course are the following: Introduction to wage incentives and current wage plans. History and development of time study, relation to motion and micromotion study, preliminary observation, technique of making time studies. Rating procedure, development of proper concept of "normal" performance, applying the rating and relaxation factors. Setting job and element standards, use of allowances, treatment of variables, introduction to standard data, synthetic standards, problems in the application of standards. Laboratory practice will supplement the classroom work.

2½ semester hours credit

M 15 WAGE ADMINISTRATION

The matters related to the establishment of an effective and equitable wage payment plan and the administration of the same is of prime importance from the production as well as the labor relations point of view. The course is a comprehensive study of the underlying theory of industrial wages. Specific consideration is given to job and salary analysis and evaluation; merit rating; incentive wages; wage payment plans. The importance of a sound wage structure to healthy employer-employee relations.

2½ semester hours credit

M 16 PRODUCTION PLANNING AND CONTROL

This course is designed to include basic problems involved in the production department related to planning, scheduling and control. This course is a sequel to Principles of Production and includes the following subjects: Factory organization, factory planning and layout, materials, handling, storage, maintenance, power. Forecasting and budgeting, planning, scheduling, routing, dispatching, subcontracting. Quantity control, quality control, waste control, priorities, allocations, controlled materials plan, records and reports.

2½ semester hours credit

M 17-18 BUSINESS PLANNING AND RESEARCH

To examine the nature, organization, and operation of our present economic society as a producing mechanism, and the flow of income arising out of this production, which determines the capacity of the people to purchase the goods and services produced annually, and to provide the savings essential to the formation of new capital. To develop and present an objective and comprehensive analysis of the information and statistics regarding our economic system which influence general business conditions and which furnish useful aids toward more definite and more accurate business decisions. To demonstrate the practical usability of these data in actual business situations involving the management of production, marketing, and finance.

5 semester hours credit

M 22 LABOR-MANAGEMENT RELATIONS

The course is designed to develop an understanding of the problems involved in labor-management relations with procedures for promoting sound, healthy industrial relations. Consideration is given to the following: Historical background of industrial relations, 1896-1950. Policies of labor and management in respect to hiring and layoffs, technological changes, wages and market positions. Effects of collective bargaining upon income of labor, employment, accumulation of capital, and national income. The first trade agreement and renewals. The nature of grievances and grievance procedures especially as they relate to wage incentive systems and job evaluation.

2½ semester hours credit

M 23-24 PERSONNEL MANAGEMENT

Psychological principles related to employment; organization of personnel department, sources of supply; the interview; employee selection; industrial employment testing; employee training; promotions; transfers and terminations; absenteeism and labor turnover; handicapped workers; employee incentives; grievance analysis and handling; special problems of human relations.

5 semester hours credit

M 25-26 CASUALTY INSURANCE

This is a comprehensive coverage of casualty insurance including liability risks, automobile insurance, automobile liability insurance, employers' liability and workmen's compensation, accident and health insurance, theft coverages and miscellaneous casualty coverages. Special attention is paid to the policy contract, rate making, experience rating, endorsements, assignment of policies, etc.

5 semester hours credit

M 27 LABOR RELATIONS SEMINAR

Round table discussion of current labor-management problems such as union responsibilities, management responsibilities, the annual wage, profit sharing, criteria for wage determination, welfare programs, etc. Cases under consideration will be led by men prominent in their specific fields. Class limited in size.

(Prerequisites, M 22, M 29, M 30)

2½ semester hours credit

M 28 JOB ANALYSIS AND EVALUATION

Basic principles underlying theory of wage calculation, job elements and their definitions, rating scales, writing job descriptions and specifications, selection of appropriate rating plan, setting up job factors and maximum point values, use of several methods of determining specific point values. Development of wage structures.

2½ semester hours credit

M 29 LABOR LEGISLATION AND GOVERNMENT AGENCIES

Government and Labor-Management Relations and the development of labor legislation. The purpose, policy and jurisdiction of the National Labor Relations Act, as amended by the recent Taft-Hartley Act. A detailed study of the Labor-Management Relations Act, 1947 (Taft-Hartley Act). The Fair Labor Standards Act of 1938 (Wage and Hour Law) as amended by the Portal-to-Portal Act of 1947. Consideration of the procedures, powers and limitations of the agencies administering the statutes.

(Prerequisite, M 22)

2½ semester hours credit

M 30 THE LABOR CONTRACT—NEGOTIATION AND ADMINISTRATION

The negotiation and re-negotiation of labor contracts; study of the component clauses such as union recognition and security, management prerogatives, seniority, wages, hours, working conditions; grievance analysis and procedure developed through case studies in the day-to-day labor-management relations as affected by such clauses.

(Prerequisite, M 22)

2½ semester hours credit

M 31 TECHNIQUES OF SUPERVISION

Supervision is the function of directing, controlling, and co-ordinating the combined efforts of men, machines and materials. Positions of managerial capacity involve the responsibility of supervision. This course is designed to provide basic instruction in such phases as the supervisor's responsibilities and objectives; planning the work and employee assignments; employee's attitudes toward management, equipment and materials; records and reports; improving individual performance; progress of employees; personnel relations; handling of grievances; training; administering of company policies; matters related to wages; the development of a congenial, enthusiastic community of work interest through the co-ordination of the work of all employees.

2½ semester hours credit

M 32 SCIENTIFIC MANAGEMENT IN OFFICE PRACTICE

This course is intended to provide basic instruction in the tools of modern scientific management, work simplification, time study, job evaluation and merit rating; work simplification as a means of improving work methods and procedures through motion study and process analysis; time study for work measurement and the establishment of standards; and job evaluation for determining the equivalency among the several jobs as a basis for a wage and salary structure. These scientific tools will be applied to office practices. Laboratory exercises will accompany the lectures.

2½ semester hours credit

M 33 OFFICE ORGANIZATION AND ADMINISTRATION

This course is based upon the scientific principles developed in M 32. It includes the modern office, its problems of planning and management; the component functions within the office; job procedures; office records and filing; office machines and equipment; flow of work; scheduling and planning of work; principles of efficient office layout; working conditions; employee testing using the National Business Entrance Tests sponsored by the National Office Management Association; selection and training; supervision; compensation; merit rating; employee relations; office policies.

(Prerequisite, M 32)

2½ semester hours credit

M 34 FORM DESIGN AND CONTROL

Forms in their relationship to office systems; forms designing tools, drafting techniques, factors and principles of form design; problems of paper size and quality for specific usage; carbons, typography and printing specifications; forms housing; the design of general and specialized forms including system cards, visible file cards, tickets, bookkeeping and addressing machine forms, carbon interleaved forms, reproduction forms (holograph and offset processes), strip accounting forms; forms control organization and administration.

2½ semester hours credit

M 35 OFFICE SYSTEMS AND PROCEDURES

This course is devoted to the techniques of system design to most effectively record and expedite the operations of the office and/or the factory. It deals with the elements of system analysis; methods of obtaining data and recording of existing procedures; procedure charts and charting techniques; developing, testing, installing and adjusting new systems; measuring effectiveness of the system. Considerable time will be devoted to laboratory analysis of certain recognized systems and for the discussion of design problems submitted by members of the class.

(Prerequisite, M 34 or equivalent)

2½ semester hours credit

M 36 INDUSTRIAL SAFETY — INDUSTRIAL ACCIDENT CONTROL

A non-technical course dealing with the organization and administration of a comprehensive accident prevention program. It will include an analysis of the basic industrial hazards, the various factors involved in industrial accidents with corrective action; the responsibilities and functions of top management, the safety engineer, the supervisor, and the safety committee; the training of employees, supervisors and other management personnel; the investigation and analysis of industrial accidents; protective equipment and clothing; maintaining management and employee interest.

2½ semester hours credit

M 37 QUALITY CONTROL IN INDUSTRY

An introduction to the elements of statistical quality control and its use industrially for attaining reduction in scrap and rework, lower inspection and production costs, improvement in product uniformity and greater quality assurance. Included in the subject material are determination of machine and process accuracy; use of histograms to segregate normal and abnormal variability; use of quality control charts for both measurable and non-measurable quality characteristics; rational determination of tolerances; scientific sampling methods for process control; single and double sampling methods for acceptance of material by lots; psychological factors in controlling quality; organization of a quality control program. Statistical principles are demonstrated practically rather than mathematically and actual case histories are used to illustrate application of methods. Each student conducts a quality control study on a problem he selects from his own field.

(Prerequisite: A current working knowledge of algebra)

2½ semester hours credit

M 38 ADVANCED QUALITY CONTROL & INDUSTRIAL EXPERIMENTING

This course is designed primarily for those who require a detailed understanding of methods of analysis of production and experimental data. The course enlarges on the material covered in Quality Control and, in addition, presents the simple statistical aids to good experimenting.

Included are advanced control chart technique, selection of rational subgroups, determination of probabilities in sampling; management of Quality Control function; fundamentals of experimenting in the factory; design and analysis of experiments involving one variable, two variables, three or more variables; analysis of experiments when quality is not measurable. Special attention is given to discussion of students' own problems and to preparation of work projects involving application of the techniques.

(Prerequisite: M 37 or equivalent)

2½ semester hours credit

M 39 WORK SIMPLIFICATION II

Short review of Work Simplification I. Advanced study and laboratory practice in operation analysis and improvement, man-machine charts, process charts, and plant layout. Study of Barnes' standardized time values and laboratory practice in their application. Human relations in methods engineering. Other subjects which may be considered will be breakdown of assembly work for conveyorizing, materials handling, integration of methods and time study, and methods planning.

(Prerequisite: Work Simplification I or equivalent industrial experience) 2½ semester hours credit

M 40 TIME STUDY II

Review of stop-watch time study. Introduction to the use of element time studies for developing standard data. Problems involved in setting up standard data for a variety of operations. Development of tables, families of curves, formulae, nomographs, and multi-variable charts for synthetic rate-setting purposes.

The laboratory part of the course will involve the complete analysis and time study of a selected operation performed upon a series of products within a definable variable range, and the building of standard data from the time studies made by the students. Operations submitted by individual students may be used for this purpose. Ample time will be provided for the development of standard data from original time study results.

(Prerequisite: M 14 or equivalent industrial experience)

2½ semester hours credit

M 41 REAL ESTATE FUNDAMENTALS

This course examines Real Estate's place in the economy, the legal processes and instruments controlling it, the operation and forces of the market itself, and the relation to over-all public interest; it includes land economics and society, property rights, titles, deeds, mortgages, contracts, liens, insurance, the market, brokerage, management, appraisal, finance, construction and development, taxation, planning, zoning, government legislation, public housing.

2½ semester hours credit

M 42 REAL ESTATE APPRAISAL — RESIDENTIAL PROPERTIES

Not only does this course examine the fundamental theories and principles of the process of appraising urban and rural properties, but the students undertake an actual case study appraisal problem. Study is made of valuation concepts, the purposes of appraisal, land economics, the collection, correlation and analysis of area, city, neighborhood and property data; the application of values, approaches, depreciated reproduction cost, income, capitalization, and comparative sales; the use of tables, residual techniques, special purpose properties; the summation and final estimate of value, and the writing of appraisal report.

(Prerequisite, M 41)

2½ semester hours credit

M 44 PRINCIPLES OF TRANSPORTATION

A survey course which treats the growth and development of the transportation function in the United States; economic aspects of transportation costs; the railroad system of the United States, its construction, regulation and control; transportation rates as income and costs as expenditures; the Interstate Commerce Act and its operation; highway and water transportation; pipeline and air transportation; the co-ordinated transportation system, its segments and their operation.

2½ semester hours credit

M 45 TRAFFIC MANAGEMENT

The application of the principles of transportation and the principles of management to industrial activity. The traffic manager in the carrier organization; comparative advantages of different modes of transportation; selling the transportation service; government regulation and traffic management; rate construction and compilation of tariffs; use of tariffs; documentation; miscellaneous charges, rules and regulations. The industrial traffic manager; duties and qualifications; the industrial traffic management department; traffic management objectives.

2½ semester hours credit

M 46-47 LIFE INSURANCE FUNDAMENTALS

The economic function of life insurance; the life insurance carriers; estimating the life risk; the mortality table; the Life Insurance Equation; premiums, reserves; loading; surplus and dividends; fundamental principles underlying the life insurance contract; types of policies; policy conditions; endorsements; annuities; group insurance. *5 semester hours credit*

M 48-49 FIRE INSURANCE AND ALLIED LINES

This course includes the history and development of Standard Fire Insurance Policies, presenting a detailed study of the Massachusetts Standard Fire Policy, its modifying forms and endorsements; methods of rating; policy writing procedures; and loss handling. It includes a study of extended coverage, consequential loss contracts, and collateral fire lines. *5 semester hours credit*

M 51-52 INLAND MARINE INSURANCE

Covers the origin, development and present scope of Inland Marine Insurance and a complete analysis of the provisions of transportation policies, property floaters, bailees' customers' floaters and special risk policies. The course is designed to provide a thorough grounding in the fundamental principles of Inland Marine Insurance, with special emphasis on policy forms, rates, underwriting and the applicability of the coverages to the needs of the insuring public. *5 semester hours credit*

M 53-54 FIDELITY AND SURETY INSURANCE

This course is introduced by a general consideration of crime insurance. Coverage under fidelity and suretyship are discussed individually, including the various forms of fidelity, judicial, contract, public official bonds, license and permit bonds, miscellaneous surety bonds, and the comprehensive crime policies. The several bond forms under the foregoing are studied individually, supplemented by the underwriting procedures in conjunction with the use of the manuals. *5 semester hours credit*

M 55 LABOR LEGISLATION II — STANDARDS AND CONDITIONS OF EMPLOYMENT

A course designed to give detailed treatment to the federal and state laws which affect the worker in his everyday employment through their regulation of the standards and conditions of employment. It will discuss problems arising under the Federal Social Security Act — Old Age and Survivors Insurance, etc.; Massachusetts Fair Employment Practice Act; State Minimum Wage Laws; Veterans' Rehabilitation; Workmen's Compensation Law, etc. *2½ semester hours credit*

M 57 MATERIALS HANDLING

The handling of materials as an integrated part of the production program offers much promise in efficiency of operation and reduction in manufacturing costs. This course approaches the problem from both the unit workplace environment and the internal flow of raw materials through the several manufacturing processes to the storage of finished goods and their loading for shipment. Materials handling equipment will be considered in practical terms of engineering characteristics, selection for specific uses, and cost factors of operation. *2½ semester hours credit*

M 61-62 INTERSTATE COMMERCE COMMISSION PRACTICE AND PROCEDURE

A course designed to prepare the student for the Interstate Commerce Commission Practitioners' Examination: History and content of the Interstate Commerce Act and its major amendments; the purpose and function of the Interstate Commerce Commission; major cases under the Commerce Clause of the Constitution and the Interstate Commerce Act; rules of evidence as applied to administrative law; ethics of practice before the Interstate Commerce Commission; procedure before the Commission — form and content. *5 semester hours credit*

M 63 MOTOR CARRIER OPERATIONS

Nature and characteristics of the motor carrier industry; types of motor carrier operations — common, contract, private as well as local and over the road; internal organization — administration and documentation, traffic management, terminal and garage operation; problems of revenue, capital structure and economics; selection and financing of equipment. *2½ semester hours credit*

M 65-66 RATES AND TARIFFS

Technical treatment of rate and tariff construction and use; the general rate level; procedure of filing; deviations from published tariffs and schedules; exceptions, commodity rates, miscellaneous departures; changes in tariffs and classifications; the economic aspects of transportation rates.

5 semester hours credit

M 67-68 MOTOR CARRIER ACCOUNTING

Determination and allocation of revenue and cost in the motor carrier industry, including cost control for the benefit of management and cost allocation for regulatory purposes; capital structure and depreciation; office systems and procedure for the motor carrier; general record keeping for internal revenue as well as transportation regulation purposes, federal and state.

5 semester hours credit

THESIS (T)**BACHELOR'S DEGREE THESIS**

T 3-4, 5 hours credit

Each candidate for the B.B.A. Degree may submit a thesis or the Business Readings reports. The conditions to be fulfilled in connection with a thesis are:

1. The selection of the subject, preparation of the outlines, and the collection of data must be worked out in accordance with the requirements of the Committee on Theses.
2. Two typewritten copies of the completed thesis must be presented to the Dean or the Director in the Divisions, not later than March 15 of the year in which the candidate expects to graduate.
3. The thesis is expected to meet the equivalent of the work required in a full-year course. It is expected to give evidence that its writer has made a thorough study of the subject or the problem selected, that he has marshaled the data in a businesslike manner, and has given evidence of his ability to reach sound and reasoned conclusions, and to present his findings in clear and convincing terms.

OCCUPATIONS (O)

The School considers that the knowledges, skills, and experiences acquired in the full-time employment of its students are the equivalent in many respects to the work carried on in a laboratory. For this reason all members of the three upper classes who expect to qualify for the Bachelor of Business Administration Degree must meet the occupational experience requirements listed below.

In order that this occupational experience may have the maximum educational value, the School maintains a Department of Vocational Guidance and Placement under the supervision of a competent Director. It is the responsibility of this Department to assist those students:

- a. Who need advice and guidance about employment in business;
- b. Who are unemployed and need placement service, and
- c. Who are already employed but need to change their present employment connections in order to obtain the greatest possible benefit from their training and experience.

There is no tuition charge for the occupational courses listed below, even though they are required for the degree. Furthermore, all services of the Department of Vocational Guidance and Placement are without charge to the student.

O 1-2 ELEMENTARY OCCUPATIONS

In this course students are required to meet with the Director of Vocational Guidance and Placement in groups or individually as he may direct, and to submit in the Upper Middler year a complete and detailed record of their employment for the college year. This report is one factor in evaluating the occupational experience credit of the student.

10 semester hours credit

O 3-4 INTERMEDIATE OCCUPATIONS

A continuation of O 1-2. Continuing guidance under the supervision of the Director of Vocational Guidance and Placement. Consideration of psychological and economic factors affecting vocations; vocational objectives. A complete report of the employment of the Junior year is required.

10 semester hours credit

O 5-6 ADVANCED OCCUPATIONS

A critical consideration of the student's present employment in the light of present-day occupational trends. Individual conferences with a view to vocational adjustments, if deemed desirable. A complete report of the employment of the Senior year is required.

10 semester hours credit

School of Business

Administrative Policies

Requirements for Admission

All applicants whose credentials are approved by the Committee on Education, and who are admitted to degree or other programs, are classified as regular or conditioned students.

Regular Students

Applicants for admission as regular students must present evidence of the completion of an approved secondary school course, or the equivalent 15 units.*

Conditioned Students

Applicants who do not meet the requirements for admission as regular students may be admitted as conditioned students provided they present satisfactory evidence of ability to profit by the work of the School.

Conditioned students may remove their admission conditions and be re-classified as regular students by using *a*, *b*, *c*, or a combination of *a* and *b*.

- a.* By applying courses which they have completed in the School of Business or in another approved college or university at the rate of one unit for each two and one-half semester hours. A course cannot be credited both for the removal of admission conditions and for the degree.
- b.* By applying units for work completed in an approved secondary school, or for work certified by an accredited certifying agency.
- c.* By action of the Committee on Education based upon all factors affecting the achievement and ability of the student in the School, when the student shall have completed the first thirty semester hours of work in his program; provided this work shall have been completed in not less than three years of attendance and with an average grade of not less than 70%. All conditioned students are required to take prescribed aptitude tests during the first year of attendance. These tests, for which no specific preparation can be made, are designed to test intellectual capacity and general fitness for college work rather than preparation in the specific subject matter of a secondary school program.

*A unit represents a year's work in any subject in any approved secondary school constituting approximately a quarter of a full year's work, or the equivalent. A four-year day high school course is regarded as representing at least 15 units of work, or 3 units in junior high school and 12 units in a three-year senior high school.

Registration

Before attending classes, students must report to the School Office for registration. Registrations will be accepted beginning July 1st for the following School year. Applicants are requested to register during the summer months to lessen the congestion during the opening week. No student will be allowed to register for any course after the second session without special permission from the Dean.

A schedule of classes may be obtained by applying at the School Office.

Class Sessions

Classes are held each evening, Monday through Friday, and on Saturday morning. *The normal schedule for students pursuing a degree, title, or certificate program is three courses a week. Students may arrange their schedules so as to attend classes one, two, or three sessions a week depending upon the number of subjects taken.* Students interested in the schedule of classes should apply to the school office.

Advanced Standing

Advanced standing credit in the School may be obtained in one or both of two ways as follows:

By Transfer of Credit. Subject to the approval of the Committee on Education, credit may be given for work completed in other approved schools, colleges and universities. An applicant desiring credit by transfer should indicate his desire at the time of filing his application for admission. The applicant should instruct the Registrar of the institution of previous attendance to mail an official transcript direct to the School of Business indicating honorable dismissal, courses completed, credits and grades. A copy of the catalog of the institution from which the transfer is sought should accompany the application for admission.

By Examination. 1. For credit: No advanced standing credit is awarded except for work previously completed in courses comparable to those offered in the School of Business. Credit may be disallowed for work previously completed due to the remoteness of the time of study. These applicants, however, will be granted the privilege of taking an examination for credit.

2. For placement: Applicants having completed three years of book-keeping in high school may petition the privilege of taking an examination for placement. Satisfactory achievement will entitle them to register for Intermediate Accounting without, however, any advanced standing credit. Applicants who, as a result of previous training and experience, may be considered to possess sufficient knowledge of a subject will be allowed the privilege of taking a special examination in particular courses. No credit will be allowed but they will be granted the privilege of substituting another course.

The grade of 75% must be obtained in examinations for placement or for credit.

Residence Requirement

Every candidate for the B.B.A. or Associate Degree must fulfill the residence requirement. The residence requirement is defined as the taking and satisfactory completion in the School of Business immediately preceding graduation of 30 consecutive semester hours of work in courses plus the requirements in Business Readings and Occupational Experience; with the further provision that at least 10 of the 30 semester hours must be in the candidate's major field.

In the case of students who for causes beyond their control move outside of the reasonable commuting area of the School, and who have completed 75 or more semester hours of credit in courses, the Committee on Education will entertain a petition to allow them the privilege of completing their degree requirements at some other approved school. Under no circumstances will a degree be awarded to any student who has completed less than 30 semester hours of credit in courses in the School of Business.

Students attending certificate programs must complete the full semester hour requirements of the programs in required courses or substitutions approved by the Dean.

Notify the Office Immediately

Of change of address.

Of withdrawal from any course — otherwise the fee for that course will be charged.

Of withdrawal from the School, giving date of the last session attended.

Attendance

The limited amount of time devoted to each subject and the rapid rate of progress in covering the essential content of a course make it highly desirable that students be present at every session. Because of the importance of regular attendance and its bearing upon the quality of scholarship, the policies governing attendance are:

Students who attend 75% or more sessions in a course are entitled to pass in that course if they attain a minimum final grade of D.

Students who attend between 50% and 74% of the sessions in a course are entitled to pass in that course if they attain a minimum final grade of C. Those who do not attain the minimum required grade of C may remove the condition only by means of a make-up examination in which they must receive a mark sufficient to raise the course grade to C.

Students who attend less than 50% of the sessions in a course will be considered ineligible to take the final examination or to receive any credit for the course.

Attendance credit is granted only when the student is in attendance at least three-quarters of the class period. Three separate absences of less than 30 minutes each constitute one complete absence unless such partial absences are canceled by satisfactory excuses.

Outside Preparation

It is expected that students will devote on the average two hours to preparation for each hour spent in the classroom. A student carrying a normal program of three courses a week will, therefore, be expected to devote to outside preparation an average of eleven to twelve hours a week. Some courses require more time for preparation than others.

Term Tests

Two tests are regularly scheduled in each semester for all courses. These tests are regarded as part of the term or course work. Students failing to take the term tests for justifiable reasons may petition for a make-up privilege *within one week of the date of the test*. Make-up privilege will not be allowed to any student merely for the purpose of raising his test grade. A fee of \$3.00 is charged for each make-up test.

Regular Examinations

The general policies governing regular examinations are:

A final examination will be held at the end of each course unless an announcement to the contrary is made.

The minimum passing grade in a regular final examination is D.

Students who, for justifiable reasons, are unable to take a final examination may be allowed the privilege of a make-up examination upon petition to the Dean. This examination will be considered as the original examination for grading purposes.

The student who has received a passing mark in a final examination and in a course may not take another examination for the purpose of raising his grade unless he repeats the course in its entirety.

Condition Examinations

The following policies govern re-examinations:

Permission for taking a make-up examination is dependent upon the quality of the work which the student has done throughout the course and is a privilege which the Committee on Education may grant to students who have received an E grade or an incomplete (Inc.).

The condition or make-up examinations are given on specified dates. Students should consult the School Office for the specific dates of each examination.

Only one make-up examination in any given subject is allowed for the purpose of removing a conditional failure.

A make-up examination for purposes of removing a condition or an incomplete grade must be taken within the next School year. In such cases students may take either the examination at the condition examination period or the final examination when next given if within a period of one year. A fee of \$5 is charged for each School of Business examination taken out of course.

A minimum grade of 65% is required on each make-up examination unless a higher minimum is specified.

Whatever grade the student obtains on the make-up examination is credited as the final examination grade, but in no case can the final grade in the course be more than 70% except in the case of students who have been excused from taking the regular final examination.

Marks and Credits

The following system of grading is in use:

Superior Work, A; Above Average Work, B; Average Work, C; Lowest Passing Grade, D; Unsatisfactory Work, E; Failure, F; Incomplete, Inc.

Students receiving an E, or unsatisfactory work grade, in an examination or as a final grade in the course, may remove the unsatisfactory grade by taking a make-up examination when it is next given, or at the time of the conditional examinations in September. The minimum passing grade of 65% is required on the make-up examination, unless a higher minimum is designated. In no case will a student taking a make-up examination be allowed more than a C for a final grade even though a higher grade may be obtained.

Students receiving an F grade in a course must repeat the course in its entirety including term work, examinations, and attendance.

The policy is followed of mailing all grade and status reports to students instead of issuing these reports at the School Office or over the telephone.

A passing grade in a final examination as well as a passing final grade in the course is necessary in order to receive credit in the course.

Credit for one-half of a full-year course is not generally given, and in any event only upon approval by the Dean in advance of beginning the course.

In order to qualify for a degree, title or a certificate, the student must maintain a general average of C for the entire program. This is not interpreted to mean that each course must be passed with a grade of C, but that the average of all courses must be at least C. Grades of courses credited by transfer or by examination are not included in computing averages.

Graduation with Honors

Honors are based upon the excellence of the work performed by the students in the School. Three honorary distinctions are conferred upon properly qualified candidates for the bachelor's degree upon graduation:

Highest honors to those who have completed all work with an average of 95%.

High honors to those who have completed all work with an average of 90%.

Honors to those who have completed all work with an average of 85%. These honors are subject to further conditions as follows:

To be entitled to honors a student must have completed a minimum of two full years of study in the School.

Courses credited by advanced standing whether by transfer or by examination will be eliminated in determining honors.

Scholarships, Awards, and Loan Funds

The following scholarships and awards are available to students enrolled for a normal schedule of fifteen or more semester hours of class work who are pursuing a degree or title program in the School of Business in Boston. One-fourth of the scholarship is applied to the tuition of the recipient at each quarterly payment.

SCHOOL OF BUSINESS HONOR AWARDS

A half tuition scholarship award is made each year to the highest ranking student of that year in the Junior, Upper Middler, Lower Middler, Sophomore and Freshman classes who re-enrolls the following year for a normal schedule of study.

A quarter tuition scholarship award is made each year to the second highest ranking student of that year in the Junior, Upper Middler, Lower Middler, Sophomore and Freshman classes who re-enrolls the following year for a normal schedule of study.

To be eligible for either a half or a quarter tuition honor award, a student entering the School with advanced standing credit, except by examination, must have completed at least thirty semester hours of classroom work at the time the award is made.

THE CLARKSON-ALUMNI SCHOLARSHIP

This scholarship, made available through the generosity of the Alumni Association of the School of Business, is in memory of George S. Clarkson, a member of the Class of 1914 and an instructor in Accounting for many years. This scholarship, which is indeterminate in amount, is granted to the student who obtains the highest cumulative average in one of the Accounting curricula at the close of his Junior year. To be eligible, the student must have completed thirty semester hours of credit in residence in Accounting courses. If he is eligible for an award of greater monetary value, the Clarkson-Alumni award will be made to the next highest ranking student who is eligible. To be eligible for this scholarship the student must pursue a normal schedule the following year.

DEAN RUSSELL WHITNEY MEMORIAL SCHOLARSHIP

Alpha Chapter of the Pi Tau Kappa Fraternity sponsors an annual tuition scholarship in memory of former Dean Russell Whitney. The award consists of a half tuition made available to the man in the Junior Class of the School of Business whose qualities of leadership and influence among his fellow students, whose strength of character, whose record of scholarship and broad achievement mark him as outstanding. The award is made available to the student in his Senior year. To be eligible for this scholarship the student must pursue a normal schedule during his Senior year.

KAPPA TAU PHI SCHOLARSHIP

This scholarship award of one quarter tuition is made available by the Kappa Tau Phi Sorority. It is granted annually to the woman student who ranks highest in her class at the end of the Sophomore year unless she is eligible for an award of greater monetary value, in which event the award will be made to the highest ranking woman student who is not eligible for such an award. To be eligible for this scholarship the student must pursue a normal schedule the following year. In determining this award grades of all courses completed in the Freshman and Sophomore years shall be considered.

ALUMNI LOAN FUND

The Alumni Association of the School of Business in Boston has provided a loan fund which is available to students in the Senior and Junior classes in Boston who are in need of financial assistance in order to continue their studies. Applications for loans should be addressed to the Dean of the School. All applications must be approved by the Alumni Loan Fund Committee.

SCHOOL OF BUSINESS LOAN FUND

By vote of the Student Council a part of the Student Activities fees for 1937-1938 was set aside to provide a loan fund which is available to students

temporarily in need of small loans for tuition or other School charges. Students needing assistance from this fund should confer with the Dean who administers it.

Probation and Discipline

The Committee on Education, in dealing with students whose work in the School may be unsatisfactory, or whose conduct is such as to make it inadvisable for them to continue as members of the student body, considers each case upon its individual merits. The following general principles are kept in mind in handling such cases:

Students whose scholarship in any given year is unsatisfactory may be dropped from the School or may be placed on probation with the privilege of spending a year in review.

When a student is placed on probation, the probation is formally imposed for a definite time and can only be extended by approval of the Committee on Education.

This Committee has the authority to dismiss from the School or place on probation at any time or to strike off from the list of candidates for the degree any student whom it may deem unworthy either on account of unsatisfactory scholarship or for any great defect of conduct or character. The Committee may ask any student to withdraw from the School who is obviously out of sympathy with the aims and ideals of the School.

School of Business

General Information

Classrooms and Libraries

The classrooms are furnished with modern equipment and are thoroughly adapted to evening school work. Improvements in classroom facilities are constantly being made to meet the needs of the student body.

In connection with the General Library of the University in Boston a special section is devoted to books on business subjects. In addition, the leading trade and business magazines are available for student use. Additions are constantly being made to the business section of the Library in recognition of the new demands for business education and research. The reading rooms of the Library are open Monday through Friday from 8:45 A.M. to 7:30 P.M. They close at 12:00 NOON on Saturdays and are not open Sundays and holidays.

All members of the School in Boston are entitled to the privilege of using the Boston Public Library including the Business Branch at 20 City Hall Avenue. The same privilege is accorded students in the Divisions for the use of the libraries in their respective cities.

Textbooks and Supplies

The Northeastern University Bookstore is a department of the University and is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the University may be purchased at the Bookstore. In addition, the Bookstore also carries a large number of general supplies. In Boston the main store is situated in the basement of Richards Hall.

Student Council

The social and extracurricular life of the School is in charge of Student Councils consisting of representatives from each class or school group. In addition to arranging for occasional social affairs, special lectures, and meetings, the Council represents the interests of the student body. The faculty and the officials advise with the Council in regard to School policies.

Honor Fraternity

Sigma Epsilon Rho is the honor fraternity in the School of Business. Its purposes are:

To promote acquaintance and good fellowship among those men who have attained highest scholastic standing in the School.

To stimulate the student body to higher scholastic accomplishment through the bearing, influence, and work of these selected men.

To develop methods of mutual improvement and advancement among the members of this fraternity.

To support high moral, professional and scholastic ideals.

Only students with honor standing are admitted to the fraternity. Admission is by invitation, after nomination by the School faculty.

An outstanding business book is awarded each year by Sigma Epsilon Rho Fraternity to the highest ranking student for that year in each of the Sophomore, Lower Middler, Upper Middler, and Junior classes. Students will receive the award only in the event that they enroll for the subsequent year.

School of Business

Tuition and Other Fees

Tuition and fees are not transferable and are refundable only as stated under "Refund of Tuition."

Checks and drafts for all charges are to be drawn to the order of North-eastern University.

There are no auditors or auditor's rates in the School of Business.

Matriculation Fee

The University matriculation fee of \$5 must accompany the initial application for admission to the University. This fee is non-refundable.

Tuition Fee

Tuition is charged at the rate of \$11 per semester hour of credit for all students.

Tuition will be payable in four installments as follows:

First installment due on or before date of starting classes.

Second installment on November 15.

Third installment on or before starting date of second semester.

Fourth installment on March 15.

Late Payment Fee

Bills for tuition and fees are payable on or before Saturday of the week of issuance. A Late Payment Fee of \$2 is charged for all students failing to comply unless special payment arrangements are approved by the Student Accounts office.

Deferred Payment Privilege

Students who would be denied the advantages of a systematic education if required to meet the tuition payments in the manner specified above, may make other payment arrangements with the Dean. A nominal charge is made for this service.

Courses in Other Departments of the University

School of Business students assigned to courses in other departments of the University are charged the tuition rates and other fees effective in the departments to which they are assigned.

Late Registration

Students are urged to register well in advance of the opening of the semester, since any student who registers after the first week of classes of the School term is charged a Late Registration Fee of \$5.00.

General Fees

A fee of \$3 is charged for each make-up test, \$5 for each conditional examination or advanced standing examination. This fee must be paid on or before the date of the examination.

A fee of \$10 is charged for each of the Business Readings courses. Payment is due upon approval of selected readings. This fee applies only to those who elect to submit Business Readings in lieu of a thesis, and is payable ordinarily during the Upper Middler and Junior years.

A thesis fee of \$20 is required of all degree candidates who elect to write theses. This fee is payable upon presentation of the thesis which is due not later than March 15 of the year in which the student expects to receive the degree.

The University graduation fee, charged to those who are candidates for the Bachelor or Associate degree is \$15, payable on or before May 1st of the year in which the student expects to graduate.

Expense for Books and Materials

Students purchase their own textbooks and working materials. The cost varies according to the subjects for which the student is enrolled. The average cost for a normal program of three subjects is about \$15, with a maximum of approximately \$25. The textbooks for single courses range from \$3 to \$6.

General Financial Information

Checks should be drawn payable to Northeastern University.

Students are not permitted to attend class sessions or take any examinations or tests until they have paid their tuition fees or have made satisfactory arrangements for payments.

Students will not be advanced in class standing, or permitted to re-enroll in the University, nor will degrees be conferred until all financial obligations to the University have been met.

No certificate of honorable dismissal will be issued to any student who has not fully met his financial obligations to the University.

Refund of Tuition

Requests for refunds must be made at the time of filing the Application for Withdrawal at the School Office. If the withdrawal notification is sent in by mail, the refund should be requested in the letter with reasons which necessitate the withdrawal. *No refunds will be granted to a student who voluntarily withdraws* or who has attended more than five weeks of the term for which payment has been made.

Refunds of tuition will be considered only in the following instances:

1. If, because of illness, a student is compelled to withdraw before the fifth week of the term, or
2. If a student who is regularly employed is sent out of town permanently by his employer, or
3. If the hours of employment of a student who is regularly employed are changed so as to make it impossible for him to continue in attendance, or
4. If a student is inducted into military service.

The Committee on Withdrawals will consider requests for tuition refunds only on the following bases:

1. That the application for withdrawal be made immediately after the student ceases attendance.
2. The request for refund is accompanied by an *acceptable* physician's certificate in the instance of illness, or by an *acceptable* employer's certification in the instance of a change in place or hours of employment.
3. Evidence of induction into military service.

For cases complying with the above, partial refunds on tuition for the semester may be allowed according to the following schedule:

<i>Petition for Withdrawal Filed Within</i>	<i>Refund to Student on</i>	
	<i>Regular Term</i>	<i>Summer Term</i>
One Week	80 per cent	80 per cent
Two Weeks	80 per cent	60 per cent
Three Weeks	60 per cent	40 per cent
Four Weeks	40 per cent	20 per cent
Five Weeks	20 per cent	0 per cent
After Five Weeks	0 per cent	0 per cent

The above does not include fixed or non-refundable fees or laboratory fees for which there is no refund allowed.

The official "Application for Withdrawal" form may be obtained in the School Office. All refunds are made through the Student Accounts Office of the University. The refund procedure in such cases takes from three to four weeks. A check is mailed direct to the student for any refund to which he is entitled.

NORTHEASTERN UNIVERSITY

COEDUCATIONAL

COLLEGE OF LIBERAL ARTS

Offers a broad program of college subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

COLLEGE OF ENGINEERING

Offers curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

COLLEGE OF BUSINESS ADMINISTRATION

Offers curricula in Accounting, Industrial Relations, Marketing and Advertising, Finance and Insurance, and Business Management. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

SCHOOL OF LAW

Offers day and evening undergraduate programs admitting those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent, each program leading to the degree of Bachelor of Laws, and a graduate program leading to the degree of Master of Laws.

SCHOOL OF BUSINESS

Offers curricula through evening classes leading to the degree of Bachelor of Business Administration with appropriate specification in Accounting, Management, and Engineering and Business. Certificate programs in the Labor Relations Institute, the Institute of Retailing, Institute of Insurance, Institute of Traffic Management and the Office Management Institute. Preparation for C.P.A. examinations. Intensive programs arranged to meet special needs.

EVENING COURSES OF THE COLLEGE OF LIBERAL ARTS

Certain courses of the College of Liberal Arts are offered during evening hours in the fields of Biology, Chemistry, Economics, English, History, Government, Psychology and Sociology. A special program preparing for admission to the School of Law is also available. The program is equivalent in hours to one-half the requirement for the A.B. or S.B. degree. Special courses also available. Degree of Associate in Arts conferred.

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the Freshman year students may alternate their periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for students who do not desire the Co-operative Plan.

In addition to the above schools the University has affiliated with it and conducts the Lincoln Technical Institute offering, through evening classes, courses of college grade in various fields of engineering leading to the degree of Associate in Engineering; and the Lincoln Preparatory School, an accredited evening school preparing for college entrance and offering other standard high school programs.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

360 Huntington Avenue

BOSTON 15, MASS.

Telephone: KEnmore 6-5800

School of Law
47 Mt. Vernon Street
BOSTON, MASS.

114 Chestnut St.
Tel.: Spr. 6-3681
SPRINGFIELD, MASS.

**NORTHEASTERN
UNIVERSITY**

College of Liberal Arts

BULLETIN OF EVENING COURSES



BOSTON 15, MASSACHUSETTS

OFFICE HOURS

JUNE 15 — AUGUST 15

Monday through Thursday 8:45 A.M.—9:00 P.M.

Friday 8:45 A.M.—5:00 P.M.

AUGUST 15 — JUNE 15

Monday through Friday 8:45 A.M.—9:00 P.M.

Saturday 8:45 A.M.—12.00 NOON

The office is closed on all legal holidays.

INTERVIEWS

Prospective students, or those desiring advice or guidance regarding any part of the school work or curricula, are encouraged to arrange for personal interviews with the Dean or other officers of instruction. Career planning through competent guidance provides an understanding of professional requirements and develops that definiteness of purpose so vital to success.

GIFTS AND BEQUESTS

Northeastern University will welcome gifts and bequests for the following purposes:

- (a) For its building program.
- (b) For general endowment.
- (c) For specific purposes which may especially appeal to the donor.

It is suggested that, when possible, those contemplating gifts or bequests confer with the President of the University regarding the University's needs before legal papers are drawn.

Gifts and bequests should be made only in the University's legal name, which is "Northeastern University."

For further information or an interview

ADDRESS

Director of Evening Courses

NORTHEASTERN UNIVERSITY

COLLEGE OF LIBERAL ARTS

360 Huntington Avenue, Boston 15, Mass.

Telephone: KEnmore 6-5800

NORTHEASTERN UNIVERSITY

College of Liberal Arts

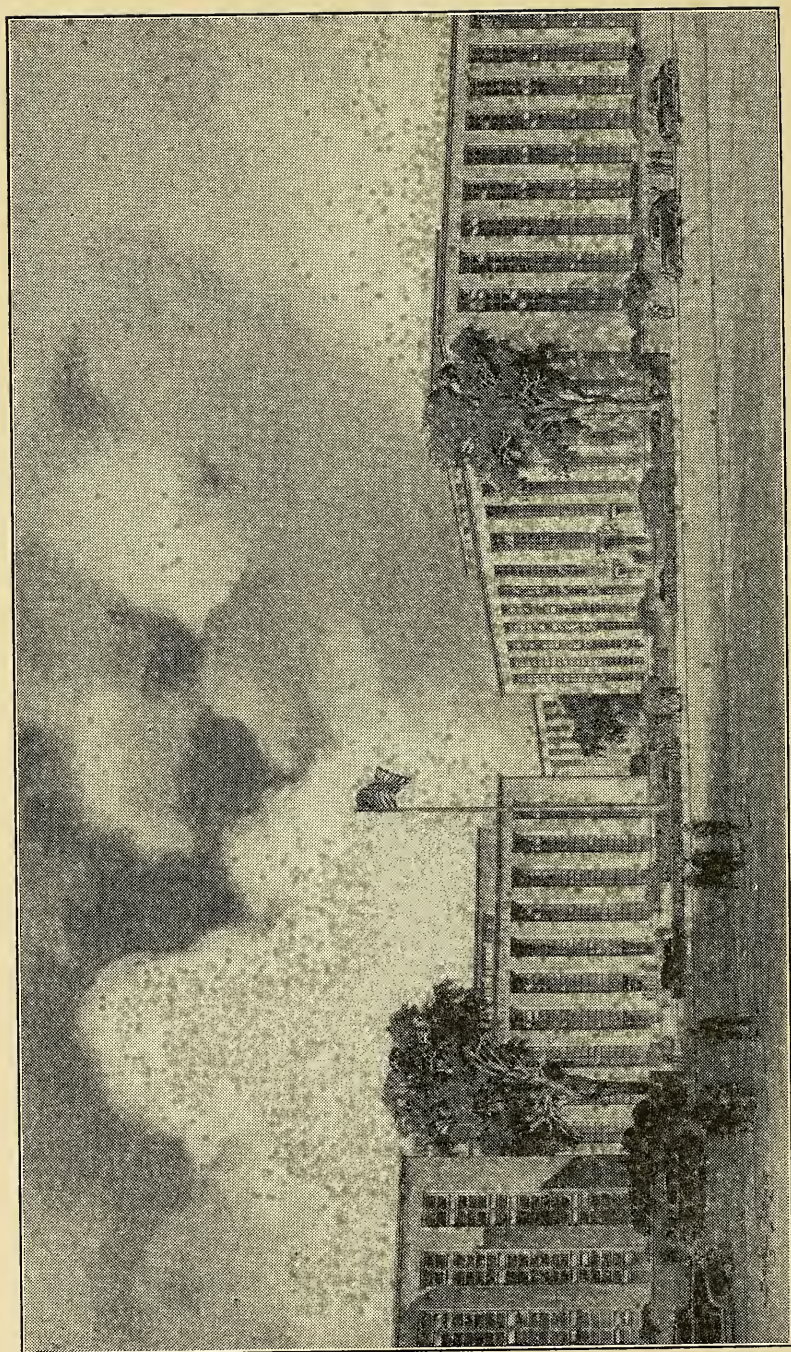
BULLETIN OF EVENING COURSES

COEDUCATIONAL



The University is located at the entrance to the Huntington Avenue subway within nine minutes of Park Street and easily accessible from all points.





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COLLEGE OF LIBERAL ARTS

Evening Courses

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COLLEGE OF LIBERAL ARTS

Evening Courses

CALENDAR

REGISTRATION	July 15–September 10
MAKE-UP EXAMINATIONS	First Week in September
FIRST SEMESTER BEGINS	Friday after Labor Day
CHRISTMAS RECESS	Christmas Week through New Year's Day
FINAL EXAMINATIONS—First Semester	Last week in January
SECOND SEMESTER BEGINS	First week in February
MAKE-UP EXAMINATIONS	Second week in March
FINAL EXAMINATIONS	Second week in June
COMMENCEMENT EXERCISES	To be announced

Class sessions will be omitted on all legal holidays.

THE NORTHEASTERN UNIVERSITY CORPORATION

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ROBERT GREENOUGH EMERSON, *Treasurer*

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ROGER AMORY
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STUART CRAIG RAND
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EUSTIS WALCOTT
EDWIN SIBLEY WEBSTER

SINCLAIR WEEKS

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MYRA WHITE

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WILLIAM CROMBIE WHITE

COLLEGE OF LIBERAL ARTS

Evening Courses

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FRANK PALMER SPEARE, M.H., LL.D., *President Emeritus*

EVERETT AVERY CHURCHILL, A.B., Ed.D., *Vice-President of the University*

ALBERT ELLSWORTH EVERETT, B.S., M.B.A., *Director of Evening Division*

WILFRED STANLEY LAKE, A.B., M.A., Ph.D., *Dean*

MILTON JOHN SCHLAGENHAUF, A.B., B.D., M.A., *Director of Admissions*

STAFF OF INSTRUCTION

R. LAWRENCE CAPON, B.S. in Ed., A.M., *American Literature*

A. ARTHUR CAPONE, S.B., A.M., Ed.M., LL.B., *Sociology, Criminology*

ELISHA B. CHRAKIAN, A.B., M.A., *Philosophy, Social Ethics, Logic*

ELMER H. CUTTS, A.B., M.A., Ph.D., *Chairman Department of History*

LESTER DEARBORN, B.S. in S.Sc., *Psychology*

ROGER S. HAMILTON, A.B., M.A., Ph.D., *Chairman Department of Economics*

CHARLES W. HAVICE, A.B., M.A., S.T.B., Ph.D., *Chairman Department of Sociology*

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FREDERICK W. KILLIAN, A.B., LL.B., *Sociology*

REGINALD G. LACOUNT, S.B., M.A., Ph.D., *Chairman Department of Physics*

THOMAS S. LESTER, A.B., *English Literature*

FRANCIS W. MCCARTHY, Ph.B., S.M., *Survey of Physical Sciences*

JOSEPH L. MCNAMARA, A.B., A.M., *Philosophy*

AUGUST C. MILLER, JR., B.S., A.M., *Comparative Government*

THOMAS A. O'KEEFE, A.B., A.M., Ed.M., *English*

RICHARD D. PIERCE, A.B., B.D., S.T.M., S.B., Ph.D., *Constitutional History*

LEONARD W. SCHROETER, M.A., *Director Institute of Nations, Constitutional History, American Foreign Policy*

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ARTHUR B. WARREN, A.B., M.A., Ph.D., *Chairman Department of Psychology*

ROBERT G. WILFONG, A.B., A.M., *Government*

DANIEL WILLARD, B.S., *Economics*

GENERAL STATEMENT

NORTHEASTERN UNIVERSITY is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in whom the control of the institution is vested. The Board of Trustees has four standing committees: (a) an Executive Committee which serves as an Ad Interim Committee between the regular meetings of the Board of Trustees and has general supervision of the financial and educational policies of the University; (b) a Committee on Buildings which has general supervision over the building needs of the University; (c) a Committee on Funds and Investments which has the responsibility of administering the funds of the University; (d) a Development Committee which is concerned with furthering the development plans of the University.

Founded in 1898, Northeastern University, from the outset, had as its dominant purpose the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the programs of other institutions but has sought "to bring education more directly into the service of human needs."

With respect to program, Northeastern has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated;
- To effective teaching;
- To advising and guiding students;
- To giving students the chance to build well-rounded personalities through a balanced program of extracurricular activities.

The Northeastern Plan of Education is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day,
- Adult Education by Night.

The plan has been developed in such a way that experience in jobs with pay is utilized to help students of limited financial resources secure an education and at the same time gain the maximum educational benefit from their practical experience. So far as the New England States are concerned, Northeastern University is the only institution whose day

colleges, other than the School of Law, are conducted under the Co-operative Plan.

The several schools and programs of the University are conducted either under the name "Northeastern University" or by its affiliated schools, The Lincoln Schools and The Huntington Day School for Boys. The following is a brief outline of the principal types of educational opportunities offered:

1. In the field of Co-operative Education there are three day colleges — the College of Liberal Arts, the College of Engineering, and the College of Business Administration. The College of Liberal Arts offers majors in the usual fields of the arts and the sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. The College of Engineering, one of the largest engineering colleges in the United States, has curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. The College of Business Administration has curricula in Accounting, Marketing and Advertising, and Industrial Administration. The College of Engineering and the College of Business Administration confer the degree of Bachelor of Science with specification indicating the field of specialization. The Co-operative Plan under which all of these day colleges operate enables the student to alternate regular periods of classroom instruction with supervised employment in an industrial or commercial position, thus combining theory and practice in an exceedingly effective manner. Apart from the educational advantages of the Co-operative Plan is the opportunity for self-support while the student is pursuing his studies at Northeastern University. During the co-operative periods, students not only gain experience but are also paid for their services. Approximately three hundred business and industrial concerns co-operate with Northeastern University in making this program effective.
2. The School of Law conducts both a day and an evening undergraduate program which leads to the degree of Bachelor of Laws, and a graduate program leading to the degree of Master of Laws.
3. The Adult Education Program has been developed in the evening work of the School of Law as indicated above, in the School of Business, and in the evening courses of the College of Liberal Arts. The School of Business has curricula in Management, Accounting, and Engineering and Business. This School awards the Bachelor of Business Administration degree with specification. A division of the School of Business is also conducted in Springfield with curricula in Accounting, Management, and Engineering and Business, leading to the Bachelor of Business Administration degree. The College of Liberal Arts offers certain of its courses during evening hours constituting a program, three years in length, equivalent in hours to one-half the requirements for the A.B. or S.B. degree and providing a general education and preparation for admission to the School of Law. The degree of Associate in Arts is conferred upon those who complete this program.

4. The Adult Education Program has also been developed through the Lincoln Schools, which are affiliated with and conducted by Northeastern University. The classes in these schools are held at convenient evening hours. The Lincoln Technical Institute offers curricula upon a college level in various phases of engineering leading to the degree of Associate in Engineering; whereas the Lincoln Preparatory School, recognized by the leading New England Colleges, prepares students for admission to college and offers other standard high school programs.
5. The Huntington Day School for Boys, also affiliated with and conducted by Northeastern University, is the outgrowth of a demand in the city of Boston for an urban preparatory school with high educational standards which would furnish thorough preparation for admission to the leading colleges and universities. While easily accessible to the various sections of Boston and to the suburbs, it has the facilities of a country day school and offers a country day school program. This School is one of the leading preparatory schools of the country.

LOCATION OF UNIVERSITY BUILDINGS

Northeastern University is located in Boston, a city which is rich in educational and cultural opportunities. The University center is on Huntington Avenue just beyond Massachusetts Avenue at the entrance to the Huntington Avenue Subway. Here on an eight-acre campus are located the educational buildings of the University except that of the School of Law. Evening classes for the College of Liberal Arts are held at the University center on Huntington Avenue.

Richards Hall

Richards Hall at 360 Huntington Avenue contains over one hundred thousand square feet of floor space devoted to administrative and instructional purposes. On the first floor are the general administrative offices of the University. The University bookstore, the "Husky Hut" and the student checkroom are located on the ground floor. There are three large lecture halls and numerous classrooms and laboratories. The office of the Director of the evening courses of the College of Liberal Arts is located on the first floor of this building.

Student Center Building

The Student Center Building contains administrative offices, facilities for student activities, reading and study rooms, lounges, some classrooms and an auditorium seating 1,300 for student convocations.

East Building

This building contains the general University library, classrooms, and certain laboratories.

Science Hall

This building contains forty-two thousand square feet of floor space. Here are located the Chemical Engineering and Biological laboratories, classrooms and lecture halls.

Botolph Building

The Botolph Building of the University contains certain laboratories, a large lecture hall, and several classrooms.

Beacon Hill Building

The Beacon Hill Building, located at 47 Mt. Vernon Street, within a few minutes' walk of the State House, and occupied exclusively by the Law School, contains administrative offices, a library, classrooms, student lounges, and other facilities.

TRANSPORTATION

The University center is easily reached from the various railroad stations and from all points on the Metropolitan Transit Authority. The new Huntington Avenue Subway comes to the surface at the University center. Ample parking space is available for the use of students coming by automobile.

THE COLLEGE OF LIBERAL ARTS

Evening Courses

STATEMENT OF PURPOSE

The College of Liberal Arts through its evening courses offers a program in general education and a special pre-legal program preparing for admission to Northeastern University School of Law.

By conducting its classes at convenient evening hours, it gives high school graduates who are obliged to seek work immediately upon graduation an opportunity to continue their education. In general those who seek admission to the evening classes of the College of Liberal Arts are divided into two groups.

The first group is composed of those who wish to continue their education along cultural lines. The second group is composed of those who wish to prepare for admission to the School of Law. Under the rules of the Supreme Judicial Court in relation to the admission of attorneys in Massachusetts, an applicant is required to complete one-half of the work acceptable for a bachelor's degree in an approved college or university before he begins the study of law. The evening pre-legal program of the College of Liberal Arts is especially designed for those who wish to prepare for admission to either the day or evening division of the Northeastern University School of Law.

Increasingly the value of a broad cultural education is being realized. This is recognized in the pre-legal study required before admission to law school in nearly all states. It is also recognized in newly required courses of a cultural nature for accounting and engineering training. This cultural education is obtainable either before or after the completion of one's specific vocational training. Not only is a cultural education valuable in and of itself, but from a strictly vocational point of view it is highly important, the broadly educated man or woman in many instances having a distinct advantage so far as vocational advancement is concerned.

ASSOCIATE IN ARTS PROGRAM

Each evening course meets the same academic standards and carries the same semester hour credit as the corresponding course in the day program of the College of Liberal Arts. The courses, however, have been carefully selected to meet the needs of evening students.

The following requirements must be fulfilled by candidates for the degree of Associate in Arts:

1. A candidate must complete a total of not less than sixty-eight semester hours of academic work with a degree of proficiency acceptable to the faculty.
2. A candidate must meet through his program of studies the minimum course requirements listed below:

	<i>Semester Hours Required</i>
Economics	8
English	12
Government	6
History	8
Psychology or Sociology	4
Science	8
Other Courses	22
	<hr/>
Total	68

The above requirements may be met by class attendance three nights a week, forty weeks each year for the three years. In some cases it may be advisable for the best interest of the student to take more than three years to complete this program.

REQUIREMENTS FOR A.B. OR S.B. DEGREE

Any student who completes the requirements for the Associate in Arts degree and who also meets the requirements for admission to the Day College may become a candidate for a bachelor's degree in the College of Liberal Arts by completing an additional sixty-seven semester hours of work and by meeting major, minor and language requirements in the Day College.

ASSOCIATE IN SOCIAL SCIENCES PROGRAM

For those wishing an integrated program of courses in the social sciences. The functional approach used in the design of these courses makes them especially valuable for those desiring practical instruction to equip themselves for employment as social service workers. They are also of practical value to teachers of social science courses in high schools as well as the large number of men and women who will find them worthwhile in providing information which should lead to happier lives through a better understanding of human associations.

The Associate Degree will be awarded upon satisfactory completion of seventy-two (72) semester hours of credit comprising the following suggested curriculum:

PROGRAM OF COURSES

FIRST YEAR

<i>Course No.</i>		<i>Semester Hours</i>	<i>Course No.</i>		<i>Semester Hours</i>
H 1	History of Civilization	4	H 2	History of Civilization	4
P 1-A	Survey of Physical Sciences	4	P 2-A	Survey of Physical Sciences	4
S 11	Fund. Social Sciences	2	S 11	Fund. Social Sciences	2
S 15	Cultural Anthropology	2	S 15	Cultural Anthropology	2

SECOND YEAR

S 1-2	Princ. of Sociology	4	S 3	Social Problems	2
			S 4	Social Pathology	2
Ps 1	General Psychology	4	Ps 9	Psychology of Personality	2
Ps 7	Social Psychology	2	Ps 10	Abnormal Psychology	2
S 17	Preparation of Marriage	2	S 16	Criminology — Juvenile Delinquency	2
			S 18	Preparation of Marriage	2

THIRD YEAR

S 19	The Family I	4	S 20	The Family II	4
S 21	Social Service I	4	S 22	Social Service II	4
Ph 1	Principles of Philosophy	2	Ph 22	Philosophy — Social Ethics	2
S 23	Ethnology — Racial Relations	2	S 24	Ethnology — Racial Relations	2

The above requirements may be met by class attendance three evenings a week, forty weeks each year, for three years. In some cases it may be advisable for the best interests of the student that he take more than three years to complete this program.

THE FAMILY INSTITUTE

The family has always been recognized as one of the fundamental units of any social structure. With the increasing complexity of our economic and social order the problems associated with family relationships have become of major importance. Sociologists are aware of the change taking place in family life. Industry is increasingly conscious of the effect that family relationships have upon the productive efficiency of its employees.

The Family Institute presents courses for those who personally may wish a better understanding of successful family relationships as well as for those who may wish to use the training professionally in some phase of social work or in industry where it is being discovered that human relations are of primary concern to good management.

PROGRAM OF COURSES

	<i>Semester Hours</i>		<i>Semester Hours</i>
Principles of Sociology	4	Preparation for Marriage	4
Social Problems	2	The Family I	4
Social Pathology	2	The Family II	4
General Psychology	4	Fundamentals of Social Sciences . . .	4
Psychology of Personality	2	Criminology	2
Abnormal Psychology	2	Cultural Anthropology	4
Social Psychology	2		

A student may register for the complete program or may take any one or more of the courses providing he possesses the necessary prerequisite qualifications. The courses carry credit as indicated and may be used toward the requirements for the Associate in Social Sciences degree.

Students completing the entire program of forty (40) semester hours will be awarded a certificate in the Family Institute.

INSTITUTE OF NATIONS

The United States has assumed a dominant position in world affairs. Individually, however, we are unprepared to accept our responsibilities as world citizens. We are ignorant of the other peoples of the world, their histories and cultures, their social, economic, and political systems and problems. Our acceptance of other peoples as neighbors can come only when we can replace ignorance and mistrust with understanding and confidence.

The Institute of Nations presents an integrated program of courses concerning the "U. S. in the World Community." It is arranged to make world events intelligible; to stimulate a critical evaluation of newspapers and other news sources; to encourage an increased social participation and stimulate the full utility of the privileges of citizenship through an international understanding which is the only path to world peace.

The important current events that affect our present activities and our future well-being will be viewed in perspective with the social, economic, political, cultural, and geographic factors that led to their happening. They will be studied only in terms of major trends and movements; while history will be examined wherever it is necessary to make the present more understandable. Thus the programs will be of practical utility and interest to every citizen.

PROGRAM OF COURSES

Each course will consider a separate area where a natural division is evident for geographic, ethnic, political, or economic reasons. The areas to be included are those which have a current relationship to the United States in the World Community.

	<i>Semester Hours Credit</i>
The Soviet Union.....	4
Western Europe.....	4
Asia.....	4
The Middle East.....	2
Latin America.....	2
The U. S. and World Organization.....	4

A student may register for the complete program or may take any one or more of the courses. The courses carry credit as indicated and may be used toward the requirements for the Associate in Arts degree.

Students completing the entire program of twenty (20) semester hours will be awarded a certificate in the Institute of Nations.

LABOR RELATIONS INSTITUTE

The management of labor relations presents the most vital and challenging aspect of our industrial development of the immediate future. Continuance of our American way of industrial democracy demands a harmonious understanding of the underlying principles of labor and industrial management for the peaceful adjustment of their common problems.

The Labor Relations Institute of Northeastern University was organized to serve this need. It is dedicated to the service of both labor and management. It directly concerns the work of industrial and labor executives, plant managers, personnel directors, union shop councillors and stewards. Teachers in the fields of management and the social sciences will also find that the program provides a valuable academic background for their instruction.

PROGRAM OF COURSES

Required Courses

LABOR-MANAGEMENT RELATIONS — The history and development of Collective Bargaining	COLLECTIVE BARGAINING II — The Labor Contract
COLLECTIVE BARGAINING I — Govern- ment and Labor-Management Re- lations	LABOR RELATIONS SEMINAR — Case studies in Collective Bargaining

Elective Courses

ACCOUNTING AIDS TO MANAGEMENT	MOTION STUDY
CONFERENCE LEADERSHIP	ADVANCED MOTION STUDY
GRIEVANCE ANALYSIS & PROCEDURE	PERSONNEL ADMINISTRATION
INDUSTRIAL PSYCHOLOGY	PSYCHOMETRIC TESTING IN INDUSTRY
INDUSTRIAL SAFETY	PUBLIC SPEAKING
JOB EVALUATION, MERIT RATING	TIME STUDY
JOB RELATIONS AND SUPERVISORY TRAINING	ADVANCED TIME STUDY
	WAGE ADMINISTRATION

To complete the program for a certificate requires two evenings a week for two years. It is designed to accommodate those students wishing to take individual courses in preference to the full program. The courses have college credits in either the College of Liberal Arts or the School of Business upon prior approval of the dean of the respective school.

GENERAL INFORMATION

Application for Admission

The college year begins in September. Students are also admitted at the beginning of the second semester to courses for which they have the required background.

Each applicant for admission is required to file an application blank setting forth his previous education and the name of one person to whom reference may be made concerning his character and previous training.

Inside the back cover of this catalogue is an application blank. It should be filled out in ink and forwarded to the Director of the Evening Courses of the College of Liberal Arts, Northeastern University, 360 Huntington Avenue, Boston 15, Massachusetts. Upon receipt of the application, the Director obtains the previous school records, the statement from the reference and, after considering these, informs the applicant as to his eligibility for admission.

Applications should be filed preferably before the registration period, thus allowing time to determine eligibility for admission and to adjust any schedule problems before the opening night. Applicants are urged to visit the school for a personal interview if it is possible for them to do so.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their application.

ADMISSION REQUIREMENTS

Fifteen units are required for admission and must include three units (four years) in English and at least six units in foreign languages, mathematics, science, or social studies except that students planning to major in mathematics or science must present two units in algebra and one unit in plane geometry. The remaining units are elective from other secondary school subjects which are acceptable to the Committee on Admissions.

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

The Department of Admissions reserves the right to require a candidate to be present for an examination in any subjects that it may deem necessary because of some weakness in the secondary school record.

Registration

The filing of the application for admission does not constitute registra-

tion. All students are required to register at the college and arrange for the payment of their tuition during the registration period. (See calendar, page 4.)

Attendance and Examinations

Attendance is required of all students at recitations and lectures continuously throughout the academic year.

Regular final examinations are held at the close of each course.

No student will be permitted to take a final examination in a course who has been present at less than seventy per cent of the lectures. To be entitled to attendance credit a student must be present at least one hour in a one and one-half hour lecture.

Make-up examinations are scheduled in March and September of each year. (See calendar, page 4.) Unsatisfactory and incomplete grades must be removed not later than the next school year following that in which they were received.

Grades

The work of each student shall be graded upon examinations according to the following scale:

A	Superior	} Honor Grades
B	Above average	
C	Average	
D	Lowest passing grade	
E	Unsatisfactory	
F	Failure	
I	Incomplete — no examination	

Honor List

The Honor List, issued at the end of each semester, contains the names of all students taking a full program who have an honor grade average in all subjects with no grade below "C" in any subject.

Graduation with Honor

Candidates who have maintained an honor grade average will be graduated with honor. To be eligible for honors a student must have completed a minimum of two full years of study in the College of Liberal Arts.

Scholarships

Partial tuition scholarships are awarded annually to the two highest ranking students of the freshman and middler classes. These awards are

made during the summer and are based on the record made during the previous school year.

Freshman Class — One \$80.00 scholarship is awarded to the highest ranking student.

One \$40.00 scholarship is awarded to the second highest ranking student.

Middler Class — Similar awards are made to the two highest ranking students.

In order to be eligible for these awards, students must fulfill the following conditions:

1. They must be carrying a full program — not less than twenty semester hours.
2. They must register for a full program in the fall succeeding the award.

TUITION AND OTHER FEES

Tuition and fees are not transferable and are refundable only as stated under "Refund of Tuition."

Checks and drafts for all charges are to be drawn to the order of Northeastern University.

There are no auditors or auditor's rates in the College of Liberal Arts.

Matriculation Fee

The University matriculation fee of \$5 must accompany the initial application for admission to the University. This fee is non-refundable.

Tuition Fee

Tuition is charged at the rate of \$8 per semester hour of credit for all students.

Tuition will be payable in four installments as follows:

First installment due on or before date of starting classes.

Second installment on November 15.

Third installment on or before starting date of second semester.

Fourth installment on April 15.

Late Payment Fee

Bills for tuition and fees are payable on or before Saturday of the week of issuance. A Late Payment Fee of \$2 is charged for all students failing to comply unless special payment arrangements are approved by the Student Accounts Office.

Deferred Payment Privilege

Students who would be denied the advantages of a systematic education

if required to meet the tuition payments in the manner specified above, may make other payment arrangements with the Student Accounts Office.

Courses in Other Departments of the University

School of Business students assigned to courses in other departments of the University are charged the tuition rates and other fees effective in the departments to which they are assigned.

Late Registration

No reduction in tuition is made for late registration. A student is neither entitled to classroom privileges nor considered as registered and enrolled until tuition due has been paid or satisfactory arrangements made in person with the Dean.

General Fees

A fee of \$3 is charged for each make-up test, \$5 for each conditional examination or advanced standing examination. This fee must be paid on or before the date of the examination.

The University graduation fee, charged to those who are candidates for the Bachelor or Associate degree, is \$15, payable on or before May 1 of the year in which the student expects to graduate.

General Financial Information

Checks should be drawn payable to Northeastern University.

Students are not permitted to attend class sessions or take any examinations or tests until they have paid their tuition fees or have made satisfactory arrangements for payments.

Students will not be advanced in class standing, or permitted to re-enroll in the University, nor will degrees be conferred until all financial obligations to the University have been met.

No certificate of honorable dismissal will be issued to any student who has not fully met his financial obligations to the University.

Refund of Tuition

Requests for refunds must be made at the time of filing the Application for Withdrawal at the School Office. If the withdrawal notification is sent in by mail, the refund should be requested in the letter with reasons which necessitate the withdrawal. *No refunds will be granted to a student who voluntarily withdraws* or who has attended more than five weeks of the term for which payment has been made.

Refunds of tuition will be considered only in the following instances:

1. If, because of illness, a student is compelled to withdraw before the fifth week of the term, or

2. If a student who is regularly employed is sent out of town permanently by his employer, or
3. If the hours of employment of a student who is regularly employed are changed so as to make it impossible for him to continue in attendance, or
4. If a student is inducted into military service.

The Committee on Withdrawals will consider requests for tuition refunds only on the following bases:

1. That the application for withdrawal be made immediately after the student ceases attendance.
2. The request for refund is accompanied by an *acceptable* physician's certificate in the instance of illness, or by an *acceptable* employer's certification in the instance of a change in place or hours of employment.
3. Evidence of induction into military service.

For cases complying with the above, partial refunds on tuition may be allowed according to the following schedule:

<i>Petition for Withdrawal Filed Within</i>	<i>Refund</i>
Two Weeks	80 per cent
Three Weeks	60 per cent
Four Weeks	40 per cent
Five Weeks	20 per cent
After Five Weeks	0 per cent

The above does not include fixed or non-refundable fees or laboratory fees, for which there is no refund allowed.

The official "Application for Withdrawal" form may be obtained in the School Office. All refunds are made through the Student Accounts Office of the University. The refund procedure in such cases takes from three to four weeks. A check is mailed direct to the student for any refund to which he is entitled.

DESCRIPTION OF COURSES

Not all courses are offered every year. The University reserves the right to withdraw any course in which there are less than eight enrollments.

ECONOMICS

Ec 3e Economic Principles

A thorough grounding in the fundamental principles and laws of economics is the aim of this basic course. The main topics include the nature and organization of production, the nature and importance of wants, the relation of money and prices, the process of exchange, and the nature of international trade.

2 semester hour credits

Ec 4e Economic Principles

A continuation of Ec 3e. A careful analysis is made of the determination of price under conditions of competition and monopoly, and of the distribution of wealth and income in the form of wages, economic rent, interest, and profits. The elements of insurance are discussed in connection with profits.

Preparation: Ec 3e

2 semester hour credits

S5-6e Economic Problems

In this course the application of economic principles to some of the major economic problems of modern society is emphasized. The problems studied include consumption, protective tariffs and subsidies, labor problems such as unemployment and labor unions, and the business cycle, price stabilization, the agricultural problem, the relation of government to business, including control of monopolies and public utilities, insurance, public finance, and proposals for the remodeling and improving of the economic system.

Preparation: Ec 3e, Ec 4e

4 semester hour credits

ENGLISH

E 1-Ae English I

The aim of this course is to help the student attain competence in the understanding and evaluating of modern literature and in written expression. It includes a review of the structural essentials of the English language, various written assignments, and the study of essays and informational articles.

2 semester hour credits

E 2-Ae English I

Continuing the general purposes of E 1-Ae, this course proceeds to a study of the special problems of description and narration, and to a critical reading of poems, short stories, and plays.

2 semester hour credits

E 13e Effective Speaking

This course offers practical training in the preparation and presentation of the various types of speeches. The instruction is planned to eliminate defects of voice, posture, and delivery, and to develop in the student an ability to speak easily, naturally, and forcefully.

1 semester hour credit

E 14e Effective Speaking

Continued practice in impromptu and extempore speaking, organization of material, consideration of the audience, and vocabulary building form the basis of the course.

Preparation: E 13e

1 semester hour credit

E 15e Survey of English Literature

A survey of English literature to 1800. After a brief study of the social and political background of each literary period, the writing of the period is considered, and the more important writers are studied and read in detail. The purpose of the course is to give the student an appreciation of English literature as a whole, and an intimate knowledge of its major figures.

2 semester hour credits

E 16e Survey of English Literature

A survey of English literature from 1800 to the present century. The outstanding writers are read, studied, and related to the general background of nineteenth-century England. The purpose of the course is to give the student an understanding of the writers who contributed most to the formation and development of modern literature in England.

2 semester hour credits

E 25e American Literature to 1860

A survey of American literature from colonial times to the triumph of the transcendental movement in New England. The work of Bryant, Irving, Cooper, Poe, Emerson, Thoreau, Lowell, Holmes, Longfellow, and Melville will be emphasized.

2 semester hour credits

E 26e American Literature After 1860

Continuing E 25e, the course will consider the rise of realism after the Civil War, the development of American humor, the appearance of local color writers, and modern trends since 1900.

2 semester hour credits

GOVERNMENT**Gv 1e American Government and Politics**

The study of our National Government with respect to its organization and function; its powers and limitations under the Constitution; its legislative, administrative, and judicial machinery under the party system of government and bureaucracy.

2 semester hour credits

Gv 2e American Government and Politics

A more detailed study of the relationships of our federal, state, and municipal governments, including an analysis and comparison of the various state governments and types of municipal government with respect to state and local agencies for carrying out the executive, legislative, and judicial functions of government in a democratic country.

2 semester hour credits

Gv 3e Comparative Government

The older governments of Europe, those principally of Great Britain and France, but also of Switzerland and the Scandinavian countries, are described and analyzed in this course. Institutions are compared in these various states with reference to America and the newer governments of Europe.

2 semester hour credits

Gv 4e Comparative Government

A study of the newer governments of Europe, as found in Germany, Italy, and the Soviet Union. Democracy and dictatorship are analyzed as different modes of life and rule. These states are compared to each other, to the older governments of Europe, and to the United States.

2 semester hour credits

Gv 8e Modern Political Theory

A critical study is made of the major developments in political theory since Bentham, with special reference to the influence of these developments upon American politics and political institutions. Attention is paid to the modern conflict between the democratic and the totalitarian conceptions of the state.

2 semester hour credits

Gv 10e The Soviet Union

This course will include the land and its resources; the people and their ethnic background; the peasant problem; the Czarist political and social institutions; pre-revolutionary social thought; the revolution (Bolshevik) and the intervention; Communist theory; the period of war communism and the N.E.P.; the Five-Year Plans and Soviet economic structure; the 1936 constitution and the Soviet government structure; dictatorship or democracy; Nationalism; Pan-Slavism and Internationalism; Czarist foreign policy; Soviet foreign policy 1917-1940; Russo-American relations before World War II; World War II and "Big Three" co-operation; the Russian satellite nations before and since World War II; problems of the two-power world; the E.R.P. and Western Europe; the Truman Doctrine and the Mediterranean; conflict in Asia; the Communist Party and the nature of treason.

4 semester hour credits

Gv 11e Asia

This vast area will be considered by sections in each of which a background will be presented including the people, land, resources, early history, religion, customs, etc. The subdivisions in their order of consideration are: India, colonialism and the struggle for freedom; India, Pakistan, and the future; Indonesia, Burma and Indo-China and their struggles for independence; China, the Chinese revolution and the Kuomintang, the war years, Red China and its ideology, China and the future; Japan, its bid for leadership and the New Asia, the occupation and the future; Korea; the Soviet Union in the Far East; British, Dutch and French colonial interests; the Open-Door Policy and American interests; the Philippines and American Pacific possessions; "Asia on the March."

4 semester hour credits

HISTORY**H 1e History of Civilization**

This is primarily a background course. Introductory lectures deal with primitive society, the development of language and writing, and the early contributions of Egypt and Asia. More detail is given to the structure of Greek and Roman society, the rise of the Christian Church, the barbarian invasions of the Empire, the growth of Islam, and the life of the early Middle Ages.

4 semester hour credits

H 2e History of Civilization

This course deals with the growth of the monarchies in Europe, the medieval Church, the art and literature of the Renaissance and Reformation, the economic revolution, the Age of Reason in France and England, the Old Regime and the Revolution in France, and the growth of science and industrialism.

As in H 1e, the emphasis is upon the cultural rather than the political history of Europe.

4 semester hour credits

H 9e The United States to 1865

This course is an interpretation of the events which shaped the American nation to the Civil War. Social customs, economic influences, racial contributions, and humanitarian movements are not neglected, though the political history is stressed.

2 semester hour credits

H 10e The United States Since 1865

Major attention is given to the social, economic, and political foundations of recent history in this survey of the transition of America from an agricultural to an urban industrialized society since the Civil War. Consideration is given to the problems arising with the emergence of America as a world power.

2 semester hour credits

H 13e English Constitutional History

A study of the origin and development of the English Constitution up to 1485. Special emphasis is placed on those institutions and concepts that form the background for American constitutional history. The important differences between the American and English constitutions are stressed. This course is important for those who intend to study law.

2 semester hour credits

H 14e American Constitutional History

An introductory course to the history and principles of American constitutional law. It is designed to give the student an understanding of case-law and the significance of the courts in the American system of government. Among the special topics covered are: the power of the Supreme Court to pass upon statutes, the relation of national and state powers, civil rights, and the Commerce clause. Highly recommended for students planning to study law.

2 semester hour credits

H 15e History of American Foreign Policy

An historical survey of the foreign relations of the United States from 1775 to the present. The course is concerned with the major trends and influences, traditional policies, and actual practices in our foreign relations. One of the objectives of the course is to provide the student with a better understanding of the position of this country in world affairs today.

4 semester hour credits

PHILOSOPHY

Ph 1e Introduction to Philosophy

This introductory course combines the historical and systematic approaches to the subject. The historical treatment includes a survey of the chief philosophers and the development of basic philosophical ideas. The systematic treatment presents the several types of philosophy, such as realism, materialism, idealism, and pluralism. The place of philosophy is considered in its relation to ethics, religion, and natural sciences. The course both acquaints the student with facts about philosophy and trains him to think philosophically. *2 semester hour credits*

Ph 2e Problems of Philosophy

The chief systems of thought are applied to what may be termed the persistent problems of philosophy. The problems are to be found in the fields of epistemology, teleology, and metaphysics. The following topics suggest representative problems which will be studied: the relation between mind and body, the nature and extent of freedom of the will, the validity of knowledge, and the bearing which the more recent views in physics and psychology have upon related philosophical problems.

Preparation: Ph 1e

2 semester hour credits

PHYSICS

P 1-Ae Survey of the Physical Sciences

The purpose of the course is to give a definite conception of the physical world to those students who ordinarily would not elect a science course but who need to know something about the contributions and the place of the physical sciences in contemporary civilization. This course begins with a study of the universe and solar system. Consideration is given to the principles of distance, mass and weight, and the simple dynamics of bodies. The earth is studied from the viewpoint of its geological, meteorological, and chemical aspects, these main fields introducing a non-mathematical discussion of magnetism, heat, and electricity.

4 semester hour credits

P 2-Ae Survey of the Physical Sciences

In this course, which continues P 1-Ae, the phenomena of light are taken up. Following this, consideration is given to spectroscopy and matter structure, the periodic table, acids, bases, salts, and organic compounds. The course concludes with a discussion of certain aspects of physics which are of practical importance in the household, such as heating, lighting, refrigeration, and electrical appliances.

4 semester hour credits

PSYCHOLOGY

Ps 1e Introduction to Differential Psychology

An elementary survey of the psychology of individual differences including personality differences, together with a presentation of some of the practical applications of the findings of differential psychology.

2 semester hour credits

Ps 2e General Psychology

An introduction to general experimental psychology. The topics considered include learning, memory, thought, imagination, motivation, emotion, sensation, and perception.

Preparation: Ps 1e

2 semester hour credits

Ps 7e Social Psychology of Everyday Life

A course devoted to the psychological examination of some of the phenomena observable in everyday social life. This includes an analysis of the socialization process, the development and role of language in everyday life, and those problems which are particularly important in wartime — propaganda, rumor, and morale.

2 semester hour credits

Ps 9e Psychology of Personality

Presents a survey of historical and contemporary theories of the nature of personality. The problems of the generality of traits, the consistency of expression, and the relation of cultural factors to personality, growth, and integration will be discussed.

Preparation: Ps 2e

2 semester hour credits

Ps 10e Abnormal Psychology

An introduction to the field of psychopathology. The psychology of the neuroses and the minor disturbances of everyday life are emphasized. Interpretation of clinical findings in the light of some contemporary schools of psychology is included.

Preparation: Ps 9e

2 semester hour credits

SOCIOLOGY**S 1e Introduction to Sociology**

In presenting a survey of the origins and sources of human society, this study provides orientation for the courses in principles and problems which follow. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors.

2 semester hour credits

S 2e Principles of Sociology

Facts and principles basic to a general knowledge of the field of sociology are presented. The origins, forms, and forces of human associations are discussed. Consideration is given the several leading schools of sociological thought. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors. The course is designed to meet the needs of the student who desires only an elementary survey of the subject, as well as the student who plans to take advanced courses in social science.

2 semester hour credits

S 3e Social Problems

Attention is given the nature, complex causation, and interrelatedness of social problems in general. Cultural change, with its attendant lags, as well as other social forces and conflicts are studied. While sociological theory is occasionally introduced to clarify the problem at hand, the course is essentially practical in character. Such problems as poverty and unemployment, race antagonisms, population pressures, and the broken home are considered. Emphasis is given those pathological conditions which exist in relations between the individual and the group. Typical subjects presented include mental defectiveness and disease, alcoholism and drug addiction, suicide, delinquency and crime, and pathologies of domestic relations. Optional field trips to various institutions give concreteness to the problems studied.

Preparation: S 1e, S 2e

2 semester hour credits

S 4e Social Pathology

Similar to the course in Social Problems in background and approach, this study deals with the maladjustments and ills of human society. Emphasis is given those pathological conditions which exist in relations between the individual and the group. Typical subjects presented include mental defectiveness and disease, alcoholism and drug addiction, suicide, delinquency and crime, and pathologies of domestic relations. The field trips arranged for this course add to the practical knowledge of the social ills which are studied.

Preparation: S 1e, S 2e

2 semester hour credits

S 7e Principles of Social Ethics

To clarify the meaning of morality in social relations is the aim of this study. Right and wrong conduct is analyzed in the light of the highest values for human society. Moral laws are discussed, and the various systems of ethics are evaluated. Scientific attitudes are encouraged in order that one's moral judgments may be compatible with one's best reflective thought.

Preparation: S 1e, S 2e

2 semester hour credits

S 11e Fundamentals of Social Sciences

An investigation into the factors, controls, problems and points of view regulating human conduct. A critical analysis of the social sciences, including anthropology, psychology, sociology, ethnology, history, government and politics, jurisprudence, etc., discussing their origins, terminologies, formations, etc., and weaving this basic data into an undersnading of their interrelationships.

4 semester hour credits

S 16e Criminology

The nature and causes of crime, the criminal as a social problem, judicial agencies and procedures with past and present theories and penological practices. Procedures in adult courts, juvenile courts, and family courts. Prison systems as practiced both in Europe and the United States. Classification. Prison labor. Education within prisons. The theory of punishment as a deterrent. The individualization of treatment. Child guidance clinics. Youth service boards. The Borstal System. Social and cultural factors affecting crime. The place of psychiatry, social work, and religion in criminal treatment. The value and effectiveness of probation, parole, and indenture methods of treatment.

2 semester hour credits

S 17-18e Preparation for Marriage

Critical historical analysis of marriage forms and their origins. Factors involved in love and courtship. Parent-child roles during courtship to husband-wife relationship. Psychologic, medical, and theologic prerequisites to marriage. Examination of marriage laws, legal rights and duties of constituents. Marital values and problems previewed, e.g., recreational, educational, religions, child guidance, divorce, etc.

Course designed to summarize research to date of special importance to Social Science majors and those identified with social service agencies.

4 semester hour credits

S 19e The Family I — The Primary Social Institution

The American Family — comparison and contrast with other Occidental and Oriental forms, both ancient and contemporary. Current changes in family life and causes. Genic and psychogenic conditioning explaining the relationship between family members. Particular emphasis is given to the relation of the family to the social sciences and the promotion of education of young people for family life, marriage and parenthood. Of prime value to social service personnel and social science teachers.

4 semester hour credits

S 20e The Family II — Problems of

Causes of family disorganization — the impact of social pathology on family life. Case studies secured from welfare agencies. Reformatories, societies for prevention of cruelty to children, court records, and infirmaries for the mentally deficient. The negative influences affecting family health, e.g., disease, crime, poverty, and their prevention. The responsibilities of parenthood defined.

4 semester hour credits

S 21e Social Service I

A survey of welfare agencies. Their origins, functions, and method of operation. Problems of agencies involving health, child care, legislation, population distribution, etc. Emphasis is placed upon voluntary and state agencies and laws applicable to them.

4 semester hour credits

S 22e Social Service II

Federal agencies and laws applying to their administration. The role of the Federal Government in national welfare and relief. Problems encountered, medical, economic, political, in agency management. Privileges and rights of a United States citizen under social service laws are reviewed.

4 semester hour credits

S 23-24e Ethnology — Race Relations and Cultural Contacts

America, the Melting Pot of the World. A critical study of racial traits and cultural associations. The differences between "race" and "culture." Race the biological concept. Culture a universal maturing process. The problems of races and nationalities. Race conflicts and exploitation. An examination of the strong contemporary doctrines of racialism. A survey of the premises in which racial and cultural misunderstandings take root. An analysis of race differentials and culture differences. An attempt to reach scientific conclusions pertaining to the causes of biological variations and race attitudes.

4 semester hour credits

NORTHEASTERN UNIVERSITY
COLLEGE OF LIBERAL ARTS

Evening Courses

360 Huntington Avenue, Boston 15, Mass.

A fee of five dollars must accompany this application. Make checks, money orders, or drafts payable to Northeastern University. **This fee is not refundable.**

Application
 Received by
 Date.....

APPLICATION FOR ADMISSION

To the Director: Mr. Date.....19.....
 Mrs.

I (Print name in full) Miss..... (First) (Middle) (Last).....

hereby apply for admission to the Evening Courses of the College of Liberal Arts.

I plan to take the program checked below, and wish to enter with the term beginning.....194.....
 month

- | | | |
|--|---|--|
| <input type="checkbox"/> General Program | <input type="checkbox"/> Family Institute | <input type="checkbox"/> Special Courses |
| <input type="checkbox"/> Pre-Legal Program | <input type="checkbox"/> Institute of Nations | <input type="checkbox"/> Labor Relations |

I do intend to continue in the Day Division to complete the requirements for the A.B. or S.B. degree if circumstances permit.
 I do not

To enable you to determine my eligibility for admission I am furnishing the following information:

Mail Address: Street.....City.....State.....

Home Address: Street.....City.....State.....

Place of birth.....Date of birth.....Age.....years.....mos.....

Name and address of parent or guardian if under 21 years of age.....

.....

FILL OUT IN PENCIL

I have attended the following schools above the eighth grade. (Include other schools of the Northeastern University System and if you have attended other universities designate the school.)

NAME OF SCHOOL	LOCATION — City, State	Check Years Attended				Year Left	Year of Graduation	Degree if any
		1	2	3	4			

Course taken in high school (college, general, etc)

I request advanced standing credit and will furnish transcript for previous college work completed at

For information relative to my character and general ability, I refer you to the following person who is not a student or relative:

Name.....Street.....

City.....State.....Occupation.....

I first learned of Northeastern University through.....

Following is the name and address of the person who recommended that I enter the University.....

.....
Usual signature.....

Approved for admission as a special student with.....units credited.
regular

.....Date.....
Director.....

NORTHEASTERN UNIVERSITY

COEDUCATIONAL

College of Liberal Arts

Offers a broad program of college subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

College of Engineering

Offers curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

College of Business Administration

Offers curricula in Accounting, Industrial Relations, Marketing and Advertising, Finance and Insurance, and Business Management. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

School of Law

Offers day and evening undergraduate programs admitting those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent, each program leading to the degree of Bachelor of Laws, and a graduate program leading to the degree of Master of Laws.

School of Business

Offers curricula through evening classes leading to the degree of Bachelor of Business Administration with appropriate specification in Accounting, Management, and Engineering and Business. Preparation for C.P.A. examinations. Intensive programs arranged to meet special needs. Certificate programs in the Labor Relations Institute, the Institute of Retailing and the Office Management Institute.

Evening Courses of the College of Liberal Arts

Certain courses of the College of Liberal Arts are offered during evening hours in the fields of Economics, English, History, Government, Psychology, and Sociology. A special program preparing for admission to the School of Law is also available. The program is equivalent in hours to one-half the requirements for the A.B. or S.B. degree. Special courses also available. Associate in Arts degree conferred.

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the freshman year students may alternate their periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for students who do not desire the Co-operative Plan.

In addition to the above schools the University has affiliated with it and conducts: the Lincoln Technical Institute offering, through evening classes, courses of college grade in various fields of engineering leading to the degree of Associate in Engineering; and the Lincoln Preparatory School, an accredited evening school preparing for college entrance and offering other standard high school programs.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

Law School

47 Mt. Vernon Street

Other Schools

360 Huntington Avenue

Boston 15, Massachusetts
Telephone : KENmore 6-5800



LINCOLN TECHNICAL INSTITUTE

Evening Sessions



1950-1951

FORTY-NINTH YEAR

College Courses in Engineering

INTERVIEWS

Prospective students, or those desiring advice or guidance regarding any part of the school work or curricula, are encouraged to arrange for personal interviews with the Dean or other officers of instruction. Career planning through competent guidance provides an understanding of professional requirements and develops that definiteness of purpose so vital to success.

OFFICE HOURS

SEPTEMBER 5, 1949 — JUNE 24, 1950

Monday — Friday 8:45 A.M.—9:00 P.M.
Saturdays 8:45 A.M.—12:00 NOON

JUNE 26, 1950 — AUGUST 19, 1950

Monday and Thursday 8:45 A.M.—9:00 P.M.
Tuesday, Wednesday and Friday 8:45 A.M.—5:00 P.M.

AUGUST 21, 1950 — JUNE 30, 1951

Monday — Friday 8:45 A.M.—9:00 P.M.
Saturdays 8:45 A.M.—12:00 NOON

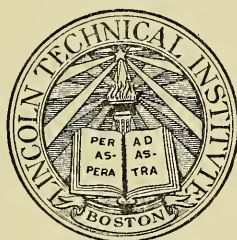
CALENDAR

	1950	
Advanced Standing and Condition Examinations..	SEPTEMBER	9
Classes Begin.	SEPTEMBER	18
Legal Holiday. No Classes.	OCTOBER	12
Legal Holiday. No Classes.	NOVEMBER	11
Legal Holiday. No Classes.	NOVEMBER	23
Final Class Session before Christmas Recess.	DECEMBER	21
	1951	
First Class Session after Christmas Recess.	JANUARY	2
Division B Classes Begin.	JANUARY	2
Second Semester Begins.	JANUARY	29
Legal Holiday. No Classes.	FEBRUARY	22
Legal Holiday. No Classes.	APRIL	19
Final Examinations.	MAY	21-31
Legal Holiday. No Classes.	MAY	30
Summer Term Classes Begin.	JUNE	4
Commencement.	JUNE	17

LINCOLN TECHNICAL INSTITUTE

Evening Engineering Courses of College Grade

1950



1951

The Institute is situated at the entrance to the
Huntington Avenue subway within nine minutes
of Park Street and easily accessible from all points.

The Lincoln Technical Institute offers courses in Engineering leading to the Degree of Associate in Engineering which, through co-operation with Northeastern University Evening School of Business, carry credit toward the Degree of Bachelor of Business Administration in Engineering and Management awarded by Northeastern University.

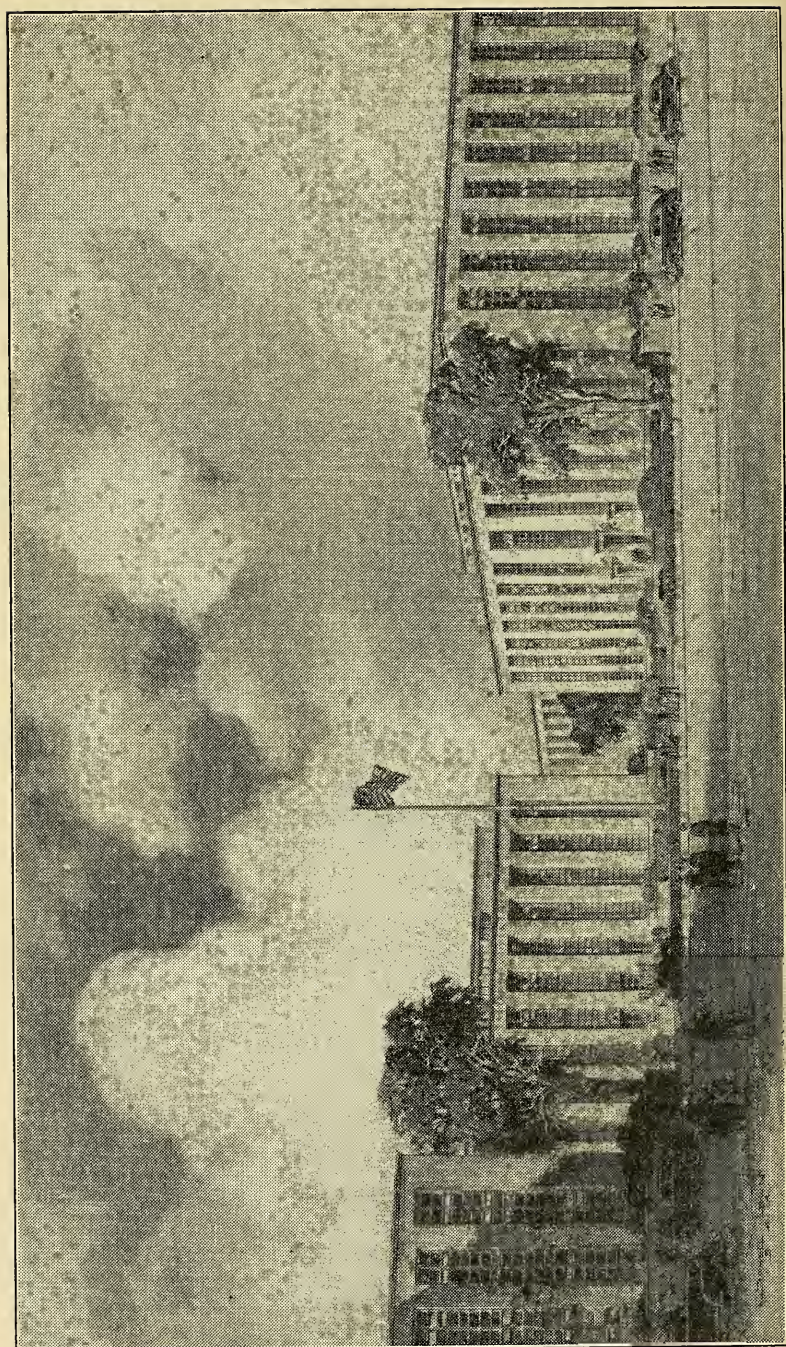


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LINCOLN TECHNICAL INSTITUTE

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OFFICERS OF ADMINISTRATION

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D.

President

EVERETT AVERY CHURCHILL, A.B., Ed.D.

Vice-President

ALBERT ELLSWORTH EVERETT, B.C.E., S.B., M.B.A.

Director of Evening Program

DONALD HERSHEY MACKENZIE, B.Ch.E., S.B., Ed.M.

Dean

OFFICE STAFF

JEAN C. PETTIPAS

Administrative Secretary

MARJORIE W. ROBERTSON

Secretary

RUTH E. DOLAN

Secretary-Recorder

ANNE M. MOORE

Typist

HELEN W. CARR

Bookkeeper

FACULTY

THE STRENGTH of any educational institution lies in the quality of its faculty. This is especially true in a technical institute devoted to the training of mature men and women most of whom are already employed in their chosen professions.

The instructional staff of the Lincoln Technical Institute is composed of men who have an active interest in the welfare of ambitious evening school students. They are men of culture and high ideals and are well qualified by training and experience to teach in their respective fields.

CHARLES M. ANDERSON *Appointed 1949*
B.C.E. Northeastern University, 1930; LL.B. Suffolk University, 1942; Deputy Engineer, Land Court.
Surveying

KENNETH N. ASTILL *Appointed 1949*
B.S. Rhode Island State College, 1944; M.A.E. Chrysler Institute of Engineering, 1946; Assistant Professor, Tufts College.
Heat Engineering

HOLLIS BAIRD *Appointed 1945*
Instructor in Physics, Northeastern University; Consulting Engineer, Radio and Television.
Industrial Electronics, Communication Engineering, Frequency Modulation, Television
Chairman of the Department of Electronic Engineering

G. WARREN BATES *Appointed 1949*
B.S. Massachusetts Institute of Technology, 1926; M.A. Boston University, 1938; Instructor, Medford High School.
Sub-Freshman Mathematics, Engineering Mathematics

EDWARD BOBROFF *Appointed 1946*
B.M.E. Polytechnic Institute of Brooklyn, New York, 1940; Electrical Engineer, Boston Navy Yard; Registered Professional Engineer.
Engineering Mathematics

FLETCHER S. BOIG *Appointed 1945*
B.S. Tufts College, 1932; M.S. Massachusetts Institute of Technology, 1933; Ed.M. Tufts College, 1937; Assistant Professor in Chemistry, Northeastern University.
Chemistry
Chairman of the Department of Chemistry

EARL K. BOWEN *Appointed 1947*
B.S. Massachusetts State College, 1940; A.M. Boston University, 1942; Head, Department of Statistics, Babson Institute.
Advanced Mathematics

EARL GEORGE BOYD *Appointed 1946*
A.B. University of Maine, 1920; M.A. Boston University, 1935; Head of Mathematics Department and Director of Mathematics for the City of Chelsea.
Advanced Mathematics

- CURTIS C. BROOKS *Appointed 1937*
B.M.E. Northeastern University, 1924; A.M. Boston University, 1937; Instructor in Mathematics, Framingham High School.
Engineering Mathematics, Applied Mechanics
- HAROLD G. BUCHBINDER *Appointed 1947*
B.S. Cornell University, 1945; Instructor, Mechanical Engineering Department, Northeastern University.
Mechanical Engineering Laboratory
- MICHAEL A. CANGIANO *Appointed 1946*
S.B. Harvard University, 1933; Ed.M. Tufts College, 1949; Head of Physics Department, Medford High School.
Engineering Mathematics
- WALTER A. CARLSON *Appointed 1948*
B.S. in Electrical Engineering, Tufts College, 1941; Sales Engineer, Westinghouse Electric Corporation.
Direct-Current Machinery, Direct and Alternating-Current Theory
- LAURENCE FULLER CLEVELAND *Appointed 1931*
B.S. Worcester Polytechnic Institute, 1929; M.S. Massachusetts Institute of Technology, 1935; Associate Professor of Electrical Engineering, Northeastern University.
Direct-Current Machinery and Laboratory
Chairman of the Department of Electrical Engineering
- ROBERT J. CONNORS *Appointed 1949*
B.S. Northeastern University, 1948; Research, Design and Development Engineer, Sylvania Electric Products Company.
F. M. and Television Laboratory
- EDWARD M. COOK *Appointed 1941*
A.B. Harvard University, 1935; M.A. Boston University, 1947; Assistant Professor in Mathematics, Northeastern University.
Advanced Mathematics
Chairman of the Department of Advanced Mathematics
- GEORGE W. COSTA *Appointed 1949*
B.S. Northeastern University, 1943; Instructor, Chemistry, Northeastern University.
Qualitative Chemistry Lectures, Quantitative Chemistry Lectures
- ALBERT L. COYNE *Appointed 1948*
B.S. University of Maine, 1915; Ed.M. Harvard University, 1937; Instructor, Rindge Technical School.
Engineering Drawing
- OTIS F. CUSHMAN *Appointed 1937*
B.S. University of New Hampshire, 1932; M.S. University of New Hampshire, 1934; Associate Professor of Drawing, Northeastern University.
Engineering Drawing
- PHILIP W. DALRYMPLE *Appointed 1949*
B.S. Massachusetts Institute of Technology, 1912; Design Engineer, Jackson & Moreland.
Machine Design
- HERBERT R. DAVENPORT *Appointed 1948*
B.S. in Electrical Engineering, Northeastern University, 1937; General Radio Company.
Electron Tubes and Circuits II
- HARRY F. DAVIS, II *Appointed 1949*
S.B. Massachusetts Institute of Technology, 1948; Graduate Student, Massachusetts Institute of Technology.
Advanced Mathematics

- WARREN C. DEAN *Appointed 1941*
A.B. Boston University, 1931; M.A. Boston University, 1940; Assistant Professor of
Mathematics, Northeastern University.
Advanced Mathematics
Chairman of the Department of Engineering Mathematics
- JOHN JAMES DEVINE *Appointed 1939*
B.S. Rhode Island State College, 1927; M.S. Brown University, 1936; Associate
Professor of Drawing, Northeastern University.
Engineering Drawing
- GILMORE C. DICKEY, JR. *Appointed 1944*
Associate in Engineering, Lincoln Technical Institute, 1943; Electrical Engineer,
McElroy Corporation.
Direct-Current Theory, Electrical Machinery
- HUGH P. DUFFILL *Appointed 1947*
B.S. Massachusetts Institute of Technology, 1920; M.S. Massachusetts Institute of
Technology, 1922; President, Drummey-Duffill, Inc., Consulting Engineers.
Structural Analysis
- GEORGE H. DURGIN *Appointed 1947*
A.B. Harvard College, 1915; Ed.M. Harvard University, 1928; Associate Professor,
State Teachers College, Bridgewater, Massachusetts.
Engineering Mathematics
- WALTER C. EBERHARD *Appointed 1946*
S.B. Massachusetts Institute of Technology, 1914; Assistant Professor of Drawing
and Descriptive Geometry, Massachusetts Institute of Technology.
Engineering Drawing
- CHARLES PHILIP ENGELHARDT, JR. *Appointed 1942*
B.S. Harvard University, 1928; Master of Architecture, Harvard University, 1930;
Architect, Kilham, Hopkins, Greeley & Brodie.
Machine Drawing
- ARTHUR L. EVANS *Appointed 1946*
A.B. Boston College, 1922; M.S. Boston College, 1923; Master in Science Depart-
ment, Boston English High School.
Physics
- HOWARD W. EVIRS *Appointed 1947*
University of Maine; Registered Professional Engineer; Station Electrical Design
Division, Boston Edison Company.
Engineering Drawing
- PATRICK H. FERZOCO *Appointed 1949*
Lowell Institute, 1926; Senior Instructor at Wentworth Institute.
Engineering Drawing
- GEORGE R. FAXON *Appointed 1949*
A.B. Harvard University, 1928; M.S. University of New Hampshire, 1932; Instructor
in Mathematics, Roxbury Memorial High School.
Sub-Freshman Mathematics
- WILLIAM D. FINAN *Appointed 1946*
A.B. Boston College, 1938; M.A. Columbia University, 1941; Instructor in Mathe-
matics, Weeks Junior High School, Newton.
Sub-Freshman Mathematics
- DAVID H. FLEMING *Appointed 1946*
Worcester Polytechnic Institute, 1915; Plant Engineer, Bird & Son, Inc.
Engineering Drawing

- JOHN L. FREEDMAN *Appointed 1949*
S.B. Massachusetts Institute of Technology, 1932; Engineer, Laboratory for Electronics.
Communication Engineering I
- MELVIN W. FRIEDMAN *Appointed 1948*
S.B. Massachusetts Institute of Technology; Instructor, Northeastern University.
Engineering Drawing
- HARRY W. FRITTS, JR. *Appointed 1947*
B.S. in Electrical Engineering, Massachusetts Institute of Technology, 1943; Research Engineer, Massachusetts Institute of Technology.
Direct-Current Machinery Lecture and Laboratory
- ALVIN R. GOLDSMITH *Appointed 1949*
A.B. University of Maine, 1942; Graduate work, Boston University, 1947-1950; Instructor of Mathematics, Northeastern University.
Engineering Mathematics
- MAYER B. GOREN *Appointed 1949*
B.A. Rice Institute, 1942; M.A. Rice Institute, 1943; Ph.D. Harvard University, 1950; Assistant Professor of Chemistry, Northeastern University.
Organic Chemistry
- FRANK A. HAMILTON *Appointed 1947*
Graduate Lincoln Technical Institute, 1939; Structural Engineer, Jackson & Moreland, 1941—.
Structural Drawing
- FRANCIS R. HANKARD *Appointed 1946*
B.S. Northeastern University, 1946; M.A. Boston University, 1949.
Physics
- GEORGE W. HANKINSON *Appointed 1944*
B.A. Mount Allison University, 1937; S.B. Northeastern University, 1943; Instructor in Civil Engineering, Northeastern University.
Surveying
- EARLE D. HARDY *Appointed 1947*
A.E. Lincoln Technical Institute, 1946; B.B.A. Engineering and Management, Northeastern University, 1947; Associate American Institute of Electrical Engineers; Plant Engineer, Town of Ipswich, Light and Water Department.
Strength of Materials
- ROBERT L. HARRINGTON *Appointed 1948*
B.M.E. Clarkson College of Technology, 1939; M.S. Case Institute of Technology, 1941; Assistant Professor of Mechanical Engineering, Tufts College.
Heat Engineering
- ERIC HARRISON *Appointed 1949*
Wentworth Institute, 1920; B.S. Suffolk University, 1937; Instructor in Mechanical Drawing, Medford High School.
Engineering Drawing
- JAMES C. HEBARD, JR. *Appointed 1946*
B.S. Northeastern University, 1943; Senior Mechanical Engineer, Mechanical Department, Equipment Engineering Division, Raytheon Manufacturing Company.
Machine Design
- DAVID E. HIGGINBOTHAM *Appointed 1947*
S.B. Northeastern University, 1944; S.M. Massachusetts Institute of Technology, 1948; Assistant Professor of Electrical Engineering, Tufts College.
Advanced Electrical Laboratory

- ROBERT EDGAR HODGDON *Appointed 1927*
B.S. University of New Hampshire; M.S. Massachusetts Institute of Technology;
Instructor, Rindge Technical School.
Physics
- ALBERT D. JOHNSON *Appointed 1945*
B.S. Northeastern University, 1941; A.M. Boston University, 1946; Graduate Student,
Boston University.
Physics
- ARTHUR E. JOHNSON *Appointed 1947*
B.S. Carnegie Institute of Technology, 1939; Instructor in Graphics, Massachusetts
Institute of Technology.
Engineering Drawing
- CHRISTOPHER F. KENNEDY *Appointed 1949*
A.B. Harvard University, 1944; Ed.M. Boston Teachers College, 1947; Instructor
of Mathematics, Northeastern University.
Engineering Mathematics
- JOHN JOSEPH KLEIN *Appointed 1949*
B.S. Northeastern University, 1949; Instructor in Electrical Engineering, North-
eastern University.
Alternating-Current Machinery Laboratory
- HOMER C. KNAUSS *Appointed 1946*
B.S. Muhlenberg College, 1932; M.S. Ohio State University, 1934; Senior Engineer,
Raytheon Manufacturing Company.
Advanced Mathematics
- HORATIO W. LAMSON *Appointed 1945*
B.S. Massachusetts Institute of Technology, 1915; M.A. Harvard University, 1917;
Research Engineer, General Radio Company.
*Direct and Alternating-Current Theory, Electron Tubes and Circuits I, Electronic Tests and
Measurements*
- HERBERT C. LANG *Appointed 1936*
B.S. Northeastern University, 1934; Chief Draftsman, Mason-Neilan Regulator
Company.
Machine Drawing
- JOHN ROBERT LEIGHTON *Appointed 1915*
B.C.E. Northeastern University, 1914; Lens Manufacturer, John R. Leighton.
Applied Mechanics, Strength of Materials
Chairman of Department of Applied Mechanics
- DEANE LENT *Appointed 1949*
A.B. Dartmouth College, 1930; Assistant Professor, Mechanical Engineering, Massa-
chusetts Institute of Technology.
Mechanism
- ANDREW G. LOFGREN *Appointed 1946*
Lowell Institute, 1932; A.A. Harvard University, 1942; Ed.M. Boston University,
1946; Junior Master, Mechanical Drawing, Boston Technical High School.
Engineering Drawing
- HAROLD K. McAFEE *Appointed 1949*
B.S.C.E. Norwich University, 1943; Structural Designer, Fay, Spofford & Thorndike.
Strength of Materials
- NORMAN S. MCCALLISTER *Appointed 1946*
A.B. Bates College, 1931; Ed.M. Bates College, 1938; Instructor in Mathematics,
Northeastern University.
Advanced Mathematics

- WALDEMAR S. MCGUIRE** *Appointed 1936*
 S.B. Massachusetts Institute of Technology, 1918; M.A. Boston University, 1930;
 Associate Professor of Chemistry, Northeastern University.
Qualitative and Quantitative Chemistry
- GEORGE HARRIS MESERVE, JR.** *Appointed 1929*
 B.C.E. Northeastern University, 1925; B.S. Northeastern University, 1931; Ed.M.
 Boston University, 1940; Professor of History and Art, Northeastern University.
Engineering Drawing
Chairman of the Department of Engineering Drawing
- CARL MILLER** *Appointed 1947*
 A.B. Harvard University, 1929; LL.B. Boston University, 1933; Ed.M. Boston
 Teachers' College, 1935; Instructor, Boston School Department.
Engineering Mathematics
- ERNEST E. MILLS** *Appointed 1947*
 B.S. Northeastern University, 1946; Instructor Mechanical Engineering, North-
 eastern University.
Mechanical Engineering Laboratory
- H. CARLTON MOORE** *Appointed 1948*
 S.B., 1924; S.M., 1933; Sc.D., 1941, Massachusetts Institute of Technology; Senior
 Mechanical Engineer, Metcalf & Eddy.
Heat Engineering
- GEORGE L. NELSON** *Appointed 1946*
 S.B. Massachusetts Institute of Technology, 1943; S.M. Massachusetts Institute of
 Technology, 1949; Instructor, Mechanical Engineering Department, Massachusetts
 Institute of Technology.
Applied Mechanics
- CARROLL BOYD NORRIS** *Appointed 1947*
 B.S. in Electrical Engineering, University of Texas, 1929; M.S. in Electrical En-
 gineering, University of Texas, 1934; Design Co-ordinator, Submarine Signal
 Company.
Alternating-Current Machinery Lecture and Laboratory
- JOHN R. O'BRIEN** *Appointed 1946*
 A.B. Boston College, 1933; A.M. Boston College, 1934; Instructor in Mathematics;
 Junior Master, Boston School Department.
Engineering Mathematics
- WILLIAM C. PAXTON** *Appointed 1945*
 B.C.E. Northeastern University, 1930; Engineer and Contractor; Superintendent of
 Public Works, Canton, Mass.
Transportation Engineering, Hydraulics
- THOMAS L. PHILLIPS** *Appointed 1949*
 B.S. Virginia Polytechnic Institute, 1947; M.S. Virginia Polytechnic Institute, 1948;
 Development Engineer, Raytheon Manufacturing Company.
Engineering Mathematics
- WINFIELD C. POTTER** *Appointed 1944*
 Ph.B. Brown University, 1910; Ed.M. Rhode Island College of Education, 1938;
 Principal, Foxboro High School.
Engineering Mathematics
- GERALD PUTNAM** *Appointed 1947*
 S.B. Massachusetts Institute of Technology, 1923; Assistant Professor, Massachusetts
 Institute of Technology.
Engineering Mathematics

- CHARLES H. ROGERS *Appointed 1949*
B.S. University of New Hampshire, 1913; Head of Department of Mathematics, Medford, Massachusetts, Public Schools.
Engineering Drawing
- GUSTAV ROOK *Appointed 1941*
B.S. Northeastern University, 1939; Graduate Study, Harvard and Northeastern Universities; Assistant Professor in Drawing, Northeastern University.
Machine Drawing
- DAVID E. ROSENGARD *Appointed 1946*
A.B. Harvard College, 1931; A.M. Harvard University, 1932; Master, Boston Public High Schools.
Advanced Mathematics
- BARNET RUDMAN *Appointed 1942*
A.B. Harvard University, 1921; Ed.M. Boston Teachers' College, 1934; Instructor, English High School.
Engineering Mathematics
- ALBERT E. SANDERSON, JR. *Appointed 1936*
B.C.E. Northeastern University, 1926; B.S. Northeastern University, 1940; M.S. Harvard University, 1944; Assistant Professor of Drawing, Northeastern University.
Structural Design
- ALBERT K. SCHMIEDER *Appointed 1941*
B.S. Northeastern University, 1941; Assistant Professor of Mechanical Engineering, Northeastern University.
Mechanical Engineering Laboratory
- CHARLES F. SEAVERN *Appointed 1941*
Harvard University, 1915-17; Associate in Engineering, Lincoln Technical Institute, 1944; Graduate work in Education, Boston University; Instructor, Everett High School.
Engineering Drawing
- LILLARD N. SHARPE *Appointed 1949*
B.S. Tennessee Polytechnic Institute, 1948; Instructor, Tennessee Polytechnic Institute, 1948-1949; Student, Graduate School, Arts and Science, Harvard University, 1949-1950.
Hydraulics
- DAVID I. SINIZER *Appointed 1949*
A.B. Columbia College, 1937; B.S. Columbia University School of Engineering, 1938; Metallurgical Engineer, Columbia University School of Engineering, 1939; Research Assistant, Massachusetts Institute of Technology.
Applied Mechanics
- HAROLD S. SPEAR *Appointed 1949*
A.B. Harvard College, 1948; Student, Harvard Graduate School of Business Administration.
Engineering Mathematics
- ERNEST L. SPENCER *Appointed 1941*
B.S. Northeastern University, 1936; M.S. Harvard University, 1943; Assistant Professor of Civil Engineering, Northeastern University.
Concrete Design
Chairman of the Department of Civil Engineering
- FREDERICK ARLINGTON STEARNS *Appointed 1921*
B.S. 1917, M.S. 1934, Massachusetts Institute of Technology; Associate Professor of Mechanical Engineering, Northeastern University.
Heat Engineering
Chairman of the Department of Mechanical Engineering

- THOMAS H. WALLACE *Appointed 1941*
 S.B. Boston University, 1933; M.A. Harvard Graduate School, 1936; Ph.D. Boston University, 1939; Associate Professor of Physics, Northeastern University.
Physics
Chairman of the Department of Physics
- WILLIAM WALLACE *Appointed 1945*
 B.S. Northeastern University, 1941; A.M. Boston University, 1949; Assistant Professor in Mathematics, Northeastern University.
Advanced Mathematics
- CHARLES J. WALSH *Appointed 1949*
 Boston Architectural Club, 1922; Practicing Architect, 1925-1937; Supervisor of Engineering Drawing, Harvard University, 1938-1947; Department Architect, Harvard University.
Engineering Drawing
- JOHN E. WALSH *Appointed 1947*
 S.B. St. Michael's College, 1938; A.M. Boston University, 1940; Research Engineer, Air Force, Cambridge Research Laboratory.
Engineering Mathematics
- JOHN L. WARNER *Appointed 1948*
 B.S. Tufts College, 1942; Assistant Professor of Electrical Engineering, Tufts College.
Alternating-Current Machinery, Transmission Line Theory, Electronics for Industry
- GEORGE B. WELCH *Appointed 1946*
 B.S. Bowdoin College, 1922; Ph.D. Cornell University, 1928; Associate Professor of Physics, Northeastern University.
Physics
- RALPH E. WELLINGS *Appointed 1944*
 A.B. Boston College, 1920; A.M. Boston College, 1925; Ed.M. Boston Teachers' College, 1930; Head of Science Department, Dorchester High School for Boys.
General Chemistry, Physics
- WARREN C. WESTHAVER *Appointed 1946*
 A.B. Harvard College, 1924; Ed.M. Harvard University, 1933; Instructor, North Quincy High School.
Physics
- ROBERT S. WHITE *Appointed 1946*
 B.S. Tufts College, 1945; Instructor, Northeastern University.
Mechanical Engineering Laboratory
- JOSEPH F. WILLARD *Appointed 1949*
 B.S. Northeastern University, 1949; Instructor of Civil Engineering, Northeastern University.
Hydraulics
- ALBERT G. WILSON, JR. *Appointed 1948*
 B.S. in Civil Engineering, Thayer School, Dartmouth, 1946; M.S. Case Institute of Technology, 1948; Structural Designer, Jackson & Moreland.
Applied Mechanics

THE LINCOLN TECHNICAL INSTITUTE

THE LINCOLN TECHNICAL INSTITUTE is affiliated with Northeastern University. It offers evening engineering courses of college grade leading to the Degree of Associate in Engineering. These courses are acceptable towards the degree of B.B.A. in Engineering and Management offered by Northeastern University Evening School of Business.

All classes in the Lincoln Technical Institute are held in the evening and are especially designed to meet the needs of those who are employed during the day.

The Lincoln Technical Institute has its origin in the Northeastern Evening Polytechnic School. The latter received its title in 1901, when the work of various technical departments, such as the Department of Steam Engineering, the Department of Art, the Automotive School and the Department of Naval Architecture, were grouped together into curricula. By 1904 the School offered definite curricula, generally of three years' duration, in Architecture, Chemistry, Marine Engineering, Structural Engineering, Steam Engineering, along with courses in Art, Navigation, Surveying, Seamanship, and other related fields. In 1925 the title Lincoln Technical Institute was given to the Northeastern Evening Polytechnic School. At this time the Lincoln Technical Institute remodeled, lengthened and consequently improved the former courses, offering a number of four-year curricula, which are described on pages 28 to 34.

In addition, provision was made so that students need not pursue a complete curriculum but could elect individual courses related to their present occupations, the only prerequisite of entry being ability to pursue the course with profit to themselves. At the present time there are over nineteen hundred students receiving instruction in the Lincoln Technical Institute in the various branches of engineering.

Since 1936 the curricular courses of the Institute have been credited by Northeastern University Evening School of Business towards the Degree of Bachelor of Business Administration in Engineering and Management offered by that school.

Effective 1939 the Lincoln Technical Institute was empowered to award the Title of Associate in Engineering to those who satisfactorily complete any one of the prescribed curricula. Effective

with the Commencement Exercises, June, 1944, the Degree of Associate in Engineering has been awarded.

The Officers of Administration are constantly alert to changing conditions and from time to time will modify existing courses to meet new needs and develop new courses so that real educational opportunities will be available to employed men and women at convenient evening hours. The School is sincerely interested in the problems of each student and the Dean and the officers of instruction encourage interviews for vocational and educational guidance.

The Lincoln Technical Institute has made it possible for many men to secure training which has enabled them to succeed in the work for which they are adapted by ability and interest.

GENERAL INFORMATION

STUDENT BODY

THE STUDENTS of the Lincoln Technical Institute are men and women of earnest purpose and firm endeavor who bring to bear on their work a thoroughness which promises future success. Their ages last year ranged from seventeen to fifty-two, the average age being twenty-six years. Almost all the students are engaged in work during the day and many different occupations have their representatives in the student body, a fact which demonstrates that the School can be of service to men in many walks of life. Some students are preparing to enter engineering work; many are already engaged in engineering work and are studying to prepare themselves for increased responsibility and rewards.

THE CAMPUS

THE LINCOLN TECHNICAL INSTITUTE is affiliated with Northeastern University and enjoys the use of all the excellent classrooms and modern laboratory facilities. It is easily reached from the North and South Stations, and from the various points of the Metropolitan Transit Authority System since it is situated at the entrance of the Huntington Avenue Subway.

The work of the School is carried on in the following buildings:

RICHARDS HALL contains the administrative headquarters of the Institute. The major portion of the building is given over to laboratory and classroom areas. Laboratory space is provided for the following: Mechanical Engineering, General and Advanced Physics, Radio, Inorganic, Organic, Analytical and Physical Chemistry, together with several research laboratories. It also contains several well-equipped drawing rooms extensively used for courses in drafting and designing which form so important a part in technical work.

SCIENCE HALL, completed in 1941, contains the Chemical Engineering and Biological Laboratories, student activities rooms, classrooms, conference rooms and lecture halls for meetings of professional engineering societies and the Business Administration Laboratory.

THE EAST BUILDING houses the University Library, a chemistry laboratory and several classrooms.

BOTOLPH BUILDING is largely devoted to work in Electrical and Civil Engineering. Here are located the Sanitary, Concrete, Photo-

grammetric, Electronics, and Electrical Measurements and Dynamo Laboratories in addition to department offices, classrooms and conference rooms.

THE STUDENT CENTER BUILDING contains administrative offices and facilities for student activities. There are reading and study rooms, lounges, additional classrooms, University commons and an auditorium seating 1,350 for student convocations.

TRANSPORTATION

THE RAILROAD SYSTEMS entering Boston issue students' tickets to students under twenty-one years of age. Veterans regardless of age are eligible for reduced rates on most of the railroads. Applications for these may be obtained at a railroad office and must be presented at the school office for signature.

The Administrative Office will do everything possible to make share-the-ride arrangements among members of the student body to accommodate those who have transportation problems.

LIBRARY AND STUDY AREAS

THE UNIVERSITY LIBRARY, located in the East Building, is well equipped in technical literature and is available for use of students of the Institute. The reading rooms are open from 9:00 A.M. to 7:30 P.M. on weekdays, and from 9:00 A.M. to 12:00 NOON on Saturdays. The privilege of obtaining books from the Boston Public Library is extended to students of the Institute. Applications for this privilege should be made at the Administrative Office of the Institute where the necessary blanks may be obtained.

Adequate study areas are available in the Library and New Building for student use.

TEXTBOOKS AND SUPPLIES

THE UNIVERSITY BOOKSTORE is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the Institute may be purchased at the Bookstore. Students taking Engineering Drawing should be prepared to expend a sum of approximately \$10.00 for drawing supplies, exclusive of the cost of a satisfactory set of drawing instruments.

VISITORS

Visitors are always welcome at one class session in any department. Those who wish to visit any of the classes should call at the school office and obtain a visitor's card signed by the Dean.

SCHOLARSHIPS

The Executive Council has made available a few scholarships to assist needy students of good mental capacity who, because of financial limitations, might be deprived of educational opportunities. The award when a scholarship is granted may range up to one-half of the cost of tuition for the year, depending upon the student's need and scholastic achievement.

DEAN'S LIST

A Dean's List, issued at the end of each school year, contains the names of all students who have, while carrying a full program (three subjects), attained a scholastic grade of 85%, or better, in each subject.

AWARDS FOR SCHOLASTIC ACHIEVEMENTS

For the school year 1950-51 the Executive Council has offered the following scholarships. To the highest ranking Sub-Freshman, Division A and B Freshman, Sophomore and Junior who returns for the following school year a scholarship of \$60. To the second highest ranking Sub-Freshman, Division A and B Freshman, Sophomore and Junior who returns for the following school year a scholarship of \$30. These scholarships will be awarded only to students pursuing a full program for the Degree of Associate in Engineering.

The winners of these scholarships for the past school year were:

<i>Sub-Freshman</i>	<i>First, Raymond J. Gutowski</i>
	<i>Second, Jeremiah Hurley</i>

<i>Freshman</i>	
Division A	<i>First, William H. Skinner</i>
	<i>Second, Thomas Gilchrist</i>

Division B	<i>First, Charles Rossoll</i>
	<i>Second, Charles Atlas</i>

<i>Sophomore</i>	<i>First, Arthur Stickney</i>
	<i>Second, Edward Colbert</i>

<i>Junior</i>	<i>First, William Crimmins</i>
	<i>Second, George Livingstone</i>

REQUIREMENTS FOR ADMISSION

REGULAR STUDENTS

Applicants for admission who present evidence of completion of an approved secondary school course, or the equivalent of fifteen units (including one unit in Algebra and one in Plane Geometry), may be admitted as regular students, candidates for the Degree of Associate in Engineering and also eligible to proceed later, if they so desire, to the Degree of Bachelor of Business Administration in Engineering and Management offered by Northeastern University Evening School of Business.

CONDITIONED STUDENTS

Applicants for admission who do not meet the full requirements for admission as regular students may, at the discretion of the Committee on Admission, be admitted as conditioned students provided such secondary school work as has been completed embraces one unit of Algebra and one unit of Plane Geometry.

A conditioned student whose scholarship is satisfactory but who has not removed his conditions within the time specified by the Committee on Admission may be permitted to continue with his program of studies, but on the completion of the chosen four-year curriculum he will receive a diploma indicating the completion of the program, but not carrying the award of the Degree of Associate in Engineering.

SPECIAL STUDENTS

Students who wish to register for a special program or for single courses will be admitted as special students, not candidates for the diploma or Degree, provided their previous education and training permit them to pursue the courses with profit.

Programs are planned to meet individual needs and should prove of benefit to those who wish rapid and immediate knowledge of certain fields, whether to supplement former training or to obtain preparation which will permit them to enter a new line of endeavor.

LATE REGISTRATION

Students should avoid late registrations since no one is permitted to join a class after the second session. *No deduction from tuition fees is made because of late enrollment.*

CLASSIFICATION OF STUDENTS

DIVISION A

Students who enter School at the beginning of the normal school year in September are termed Division A students. Programs for these students are arranged so that the work of the school year is completed by May or in early June by attendance three evenings a week. Students, however, may elect to carry a lighter scholastic load than the regular program. Summer courses are not necessary for Division A students.

DIVISION B

All Freshman courses are available in January and those entering School at that time are termed Division B students. They complete two of the Freshman courses between January and the end of May by attending classes three evenings per week. The third of the required courses is taken during the Summer Term. Division B students may thus complete the first-year requirements and continue in September, 1951, with the Sophomore program of courses.

Summer attendance is not compulsory but, in the event that a student does not pursue a summer course, attendance is necessary over a period of five years to complete graduation requirements.

SUB-FRESHMEN

A course in Elementary Algebra and Plane Geometry (Sub-Freshman Mathematics) is available beginning September 21, and ending December 21, 1950, for those students who have not completed courses in Algebra or Plane Geometry or for those students who wish to review these subjects because of the remoteness of their former study of these subjects. This course meets on Tuesday and Thursday evenings from 7 to 10 P.M. On the successful completion of this course, students are eligible to begin their first-year engineering studies with Division B students on January 2, 1951. This program permits students to save a year which would otherwise be lost, since it enables them to graduate in the customary period of four years.

In addition to the above course in Sub-Freshman Mathematics, courses in elementary Algebra and Plane Geometry are available in January and June in the Lincoln Preparatory School.

ADMINISTRATIVE REGULATIONS

APPLICATIONS FOR ADMISSION

Applications for admission should be filed as early as possible in order that the necessary investigations may be made and the status of each student definitely determined before the opening day.

REGISTRATION

Each student is required to present himself at the school office, and to have his course approved by the Dean or his assistants and to complete his registration.

In order that the school officers might be in a position to offer proper guidance, every student is required to take a Mathematics Placement Test. This test will be based on the standard first year Algebra course as offered in high school. Students will be advised when and where to report for the test.

THE SCHOOL YEAR

The school year is divided into two semesters of seventeen weeks each. The first semester extends from September 18 to January 26, and the second semester from January 29 to May 31, except that make-up sessions for public holidays may extend either term. Attention is drawn to the fact that Division B students begin their studies on January 2.

GRADUATION REQUIREMENTS

Students may register for single subjects or for complete courses provided such registration meets with the approval of the Dean; but to receive the Degree of Associate in Engineering the student must fulfill the following conditions:

- a. He must complete all the courses of his particular curriculum, either by attendance at this Institute, or by receiving advanced standing credit for those courses, or the equivalent of those courses, as determined by the Dean.
- b. He must pass such final examinations as are required in the courses he has pursued. The various curricula have been arranged so that the courses can be completed in four years. However, an extension of time will be granted to those who wish to take longer to meet the requirements for graduation.

- c. Regardless of the advanced standing credit he receives, he must have been in attendance for at least a year preceding the date on which he expects to graduate; that is, he must complete at least one full year's work in the Lincoln Technical Institute.
- d. He must achieve a scholastic average of at least 70% in the courses taken in the Institute. Courses for which a student has been awarded Advanced Standing Credit will not be counted in determining a student's scholastic average.

SESSIONS

Classes meet on weekday evenings. There are no classes on Saturdays. A full schedule will include three evenings a week. As a rule classes are scheduled from 7 P.M. till 9:30 P.M. Laboratory periods in Chemistry are of three hours' duration.

ATTENDANCE REQUIREMENTS

A careful record of attendance upon class exercises is kept for each student. Absence from regularly scheduled classes on any subject will seriously affect the standing of the student. It may cause the removal of certain subjects from his schedule and the listing of these as "conditioned subjects." However, if reasonable excuse for absence be presented, the student may be allowed to make up the time lost, and be given credit for the work; but he must complete the work at such time and in such manner as his instructor in the course shall designate. Students who are absent for four consecutive sessions are automatically withdrawn from the class rolls and may not be admitted to class until they have been re-instated by the Dean.

A minimum attendance record of 75 per cent must be maintained in all classes before a student will be admitted to examination.

Students who are unavoidably absent from class may receive the homework assignments by telephoning the school office.

EXAMINATIONS AND QUIZZES

Tests are held throughout the term at the discretion of the instructors. A test which is missed can be made up only upon petition at the school office, either in person or by telephone, and a fee of \$1.50 will be charged for each test made up. Petitions must be filed not later than the first Saturday of the month following the absence. Make-up tests will be given on the second Saturday of each month at 1:30 P.M., in a designated room in Richards Hall.

Any student who does not take the test in the month following the absence will lose this make-up privilege. Final examinations are required upon the completion of all courses.

The following system of grading is used:

A	— 90 to 100	— Excellent
B	— 80 to 89	— Good
C	— 70 to 79	— Fair
D	— 60 to 69	— Lowest Passing Grade
F	— 50 to 59	— Conditioned Failure
FF	— Below 50	— Complete Failure

A student marked "F" in a final examination may receive one special examination. If he fails in that, he must repeat the course. It is to be noted that a student whose grade is "F" *must petition for re-examination*. Permission to take a make-up examination is a privilege, not a right, and is dependent upon the quality of work the student has done throughout the course.

A student marked "FF" must repeat the course. The fee for each special examination is \$3. Grades and reports are mailed to the students and will not be given out at the school office. Under no circumstances will grades be given over the telephone.

It is to be noted that no student will be permitted to graduate who does not maintain a "C" average and that students who have not maintained such an average by the end of the Sophomore year will not be permitted to continue in School.

TRANSFERS

Students are not permitted to change from one course to another without first consulting the Dean and receiving a Transfer Order signed by him.

REPORTS OF STANDING

An informal report of the student's standing is issued at the end of the seventeenth week; and the formal report, covering the year's record, is issued at the close of each year.

In the case of students who are under twenty-one years of age, reports may be sent to parents in the event of unsatisfactory work on the part of the student, non-compliance with administrative regulations, continued absence, and withdrawal. Parents of minors may obtain reports at any time on request.

STUDENTS ADMITTED WITH ADVANCED STANDING

Advanced Standing Credit may be granted for work completed in other approved schools, colleges or institutions provided the courses taken were equivalent to those offered by the Lincoln Technical Institute. It will be necessary for the applicant to obtain an official transcript of record together with a catalogue and present them to the Dean before any action can be taken.

METHODS OF INSTRUCTION

Instruction is given by means of lectures, recitations, laboratory work and practical work in the drawing rooms. Great value is set upon the educational effect of these exercises, which constitute the foundation of each of the courses. Oral and written examinations are held at the discretion of the instructors.

The attention of every student is drawn to the fact that home assignments must be dutifully done and written work submitted as assigned if the student's grade is not to be seriously affected. Wilful disregard of this matter will result in disciplinary action by the Administrative Officers.

SUBJECTS OF INSTRUCTION

On pages 45 to 58 will be found a detailed statement of the scope of the subjects offered in the various courses. The subjects are numbered for convenience of reference in consulting the various curriculum schedules.

Required courses, and those prerequisite thereto, must have been successfully pursued before any advanced course may be taken.

TUITION AND OTHER FEES

MATRICULATION FEE

A matriculation fee of \$5.00 must accompany the initial application for admission to the Institute. This fee is not refundable.

TUITION

Tuition fees are based on a charge of \$11.00 a semester hour. The student may determine his cost for tuition by consulting the Programs of Instruction shown on pages 28 to 34 where the semester hour credit for each course is indicated.

The schedule for tuition payments for the year is as follows:

Division A Students

The first payment is due during the first week of School and the other three during the weeks of November 13, January 29 and March 26.

Division B Students

The first payment is due during the week of registration and the second during the week of March 12. The Summer Term payment is due during the week of registration in June.

Sub-Freshman Students

The tuition charge for Sub-Freshman Mathematics which runs from September 19 through December 21, 1950, is \$50.00, payable during registration week. The students then continue on January 2, 1951, as Division B students and tuition is charged at the rate of \$11.00 a semester hour, payable as indicated above.

CHEMISTRY FEE

All students taking Chemistry are charged a Chemistry laboratory deposit of \$15.00, payable in September. Those students taking Organic Chemistry are required to make an additional deposit of \$10.00 at the beginning of the second semester.

The unused portion of the deposit will be refunded after deductions are made for breakages, chemicals, supplies and non-returnables.

LATE PAYMENT FEE

Bills for tuition and fees are payable on or before Saturday of the week of issuance. A Late Payment Fee of \$2.00 is charged for all

students failing to comply unless special payment arrangements are approved by the Student Accounts Office.

LATE REGISTRATION FEE

Students are urged to register well in advance of the official opening of the semester, since any student who registers after Saturday of the opening week of the School term is charged a Late Registration Fee of \$5.00.

DEFERRED PAYMENT PRIVILEGE

Students who find considerable difficulty in meeting payments according to the schedule specified above may make other payment arrangements upon consultation with the Dean.

SPECIAL EXAMINATION FEES

The fee for each special examination for advanced standing, for conditioned students, or for students who have for justifiable cause omitted to take the regular scheduled examinations is \$3. The fee must be paid before the examination is taken.

GRADUATION FEE

On completing the curricular requirements for the Degree of Associate in Engineering the student will pay a graduation fee of \$15.00. This fee must be paid by May 15 in the year of the student's graduation.

REFUND OF TUITION

Requests for refunds must be made at the time of filing the application for withdrawal at the school office. If the withdrawal notification is sent in by mail, the refund should be requested in the letter with reasons which necessitate the withdrawal. *No refunds will be granted to a student who voluntarily withdraws* or who has attended more than five weeks of the term for which payment has been made.

Refunds of tuition will be considered only in the following instances:

1. If, because of illness, a student is compelled to withdraw before the fifth week of the term, or
2. If a student who is regularly employed is sent out of town permanently by his employer, or
3. If the hours of employment of a student who is regularly employed are changed so as to make it impossible for him to continue in attendance, or
4. If a student is inducted into military service.

The Committee on Withdrawals will consider requests for tuition refunds only on the following bases:

1. That the application for withdrawal be made immediately after the student ceases attendance;
2. The request for refund is accompanied by an *acceptable* physician's certificate in the instance of illness, or by an *acceptable* employer's certification in the instance of a change in place or hours of employment;
3. Evidence of induction into military service.

For cases complying with the above, partial refunds on tuition for the semester may be allowed according to the following schedule:

Petition for Withdrawal Filed Within: <i>Refund to Students in</i>			
	<i>Regular Term</i>	<i>Div. B Term</i>	<i>Summer Term</i>
One week	80%	80%	80%
Two weeks	80%	80%	60%
Three weeks	60%	60%	40%
Four weeks	40%	40%	20%
Five weeks	20%	20%	0%
Six weeks	0%	20%	0%
After six weeks	0%	0%	0%

The above does not include fixed or non-refundable fees or laboratory fees for which there is no refund allowed.

The official "Application for Withdrawal" form may be obtained in the school office. All refunds are made through the Student Accounts Office of the University. The refund procedure in such cases takes from two to three weeks. A check is mailed directly to the student for any refund to which he is entitled.

PROGRAMS OF INSTRUCTION

LEADING TO THE DEGREE OF ASSOCIATE IN ENGINEERING

The Lincoln Technical Institute offers four-year courses in Chemistry, Civil and Structural Engineering, Electrical Engineering, Electronic Engineering, Industrial Engineering and Mechanical Engineering. Schedules of the various curricula are given on the following pages.

On the satisfactory completion of a prescribed four-year course the Degree of Associate in Engineering is awarded to all regular students.

All these courses are of strictly college grade. In those cases where students are unable, because of circumstances, to carry all of the work prescribed in any year, an extension of time will be granted by the Dean, who will determine which subjects shall be excluded, and also the order in which the omitted subjects shall later be studied.

When a student elects a curriculum he is expected to complete all the subjects in that curriculum in order to receive the Degree.

Graduation from these programs carries four years' credit towards a six-year program leading to the Degree of B.B.A. in Engineering and Management offered by Northeastern University Evening School of Business.

SPECIAL COURSE IN CHEMISTRY**Leading to a Diploma**

FIRST YEAR					
First Semester			Second Semester		
<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>	<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>
M1	Algebra.....	2½	M2	Trigonometry.....	2½
*P1	Physics I.....	2½	P2	Physics II.....	2½
		<u>5</u>			<u>5</u>
SECOND YEAR					
*Ch1	General Chemistry.....	2½	Ch2	General Chemistry.....	2½
*ChL1	General Chem. Lab.....	3	ChL2	General Chem. Lab.....	3
		<u>5½</u>			<u>5½</u>
THIRD YEAR					
Ch3	Qualitative Chemistry...	2½	Ch4	Quantitative Chemistry.	2½
ChL3	Qualitative Chem. Lab...	3	ChL4	Quantitative Chem. Lab.	3
		<u>5½</u>			<u>5½</u>
FOURTH YEAR					
*Ch5	Organic Chemistry.....	2½	Ch6	Organic Chemistry.....	2½
*ChL5	Organic Chem. Lab.....	3	ChL6	Organic Chem. Lab.....	3
		<u>5½</u>			<u>5½</u>

These courses carry credit towards the Degree of Associate in Engineering and the Degree of B.B.A. in Engineering and Management offered by Northeastern University Evening School of Business.

Students wishing to pursue programs for the Degree should consult the Dean regarding particulars.

* No credit allowed until completion of second semester.

CHEMISTRY**Leading to the Degree of Associate in Engineering**

The Science of Chemistry and Chemical Engineering has undergone a marked development in recent years. It has grown out of the discoveries of the chemical laboratories which have launched many new industries whose production processes involve chemical as well as physical change. The chemist is in demand and his aid is sought in the operation of plants producing drugs, oils, rayon and cellophane, plastics and various synthetic products resulting from intensive research during the war. The chemist may assist in the creation of more economical manufacturing processes, promote the development of manufacturing by-products, and be instrumental in the discovery of new products in the research laboratories.

In addition to the fundamental courses in chemistry, mathematics, and physics, a considerable amount of time is devoted to more advanced work in chemistry. Since the field is so varied, the curriculum has been designed to give the students a broad training rather than a specialized training in one specific industry.

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
M1	Algebra	2½	M2	Trigonometry	2½
*P1	Physics I	2½	P2	Physics II	2½
*D1	Engineering Drawing . . .	2½	D2	Engineering Drawing . . .	2½
		<hr/>			<hr/>
		7½			7½
<hr/>					
SECOND YEAR					
M3	Analytical Geometry } . .	2½	M6	Integral Calculus	2½
M5	Differential Calculus } . .	2½	Ch2	General Chemistry	2½
*Ch1	General Chemistry	2½	ChL2	General Chem. Lab.	3
*ChL1	General Chem. Lab.	3			<hr/>
		<hr/>			<hr/>
		8			8
<hr/>					
THIRD YEAR					
*ME1	Applied Mechanics I . . .	2½	ME2	Applied Mechanics II . . .	2½
Ch3	Qualitative Chemistry . .	2½	Ch4	Quantitative Chemistry . .	2½
ChL3	Qualitative Analysis Lab. .	3	ChL4	Quantitative Analysis Lab. .	3
		<hr/>			<hr/>
		8			8
<hr/>					
FOURTH YEAR					
*Ch7	Physical Chemistry	2½	Ch8	Physical Chemistry	2½
*Ch5	Organic Chemistry	2½	Ch6	Organic Chemistry	2½
*ChL5	Organic Chem. Lab.	3	ChL6	Organic Chem. Lab.	3
		<hr/>			<hr/>
		8			8

* No credit allowed until completion of second semester.

CIVIL AND STRUCTURAL ENGINEERING

Leading to the Degree of Associate in Engineering

The field of Civil Engineering has to do with the planning and building of all kinds of structures and public works. Today its major branches include topographical, municipal, railroad, highway, structural, hydraulic, and sanitary engineering. It covers land surveying, the building of railroads, soil mechanics, harbors, docks, the construction of sewers, water works, streets and highways, the design and construction of flood control projects, bridges, buildings, walls, foundations, and all fixed structures.

This curriculum is designed to offer the relatively compact body of principles upon which all work in Civil Engineering depends. It is intended to prepare the young civil engineer to take up the work of design and construction of structures, to solve the problems of water supply, and to undertake intelligently the supervision of work in allied fields of engineering and general contracting.

FIRST YEAR					
First Semester			Second Semester		
<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>	<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>
M1	Algebra	2½	M2	Trigonometry	2½
*D1	Engineering Drawing . . .	2½	D2	Engineering Drawing . . .	2½
*P1	Physics I	2½	P2	Physics II	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry } . .	2½	M6	Integral Calculus	2½
M5	Differential Calculus } . .	2½	ME2	Applied Mechanics II . . .	2½
*ME1	Applied Mechanics I . . .	2½	CE2	Surveying II	2½
CE1	Surveying I	2½			
		7½			7½
THIRD YEAR					
*ME3	Strength of Materials I . .	2½	ME4	Strength of Materials II .	2½
CE3	Transportation Engineer-		CE4	Hydraulics	2½
	ing	2½	CD2	Structural Drawing II . . .	2½
*CD1	Structural Drawing I . . .	2½			
		7½			7½
FOURTH YEAR					
*CE5	Structural Analysis I . . .	2½	CE6	Structural Analysis II . . .	2½
*CE7	Concrete Design I	2½	CE8	Concrete Design II	2½
*CE9	Structural Design I . . .	2½	CE10	Structural Design II	2½
		7½			7½

* Credit not allowed until completion of second semester.

ELECTRICAL ENGINEERING**Leading to the Degree of Associate in Engineering**

The Electrical Engineering profession affords a wide diversification of employment opportunities. The Electrical industry and the general field of Electrical Engineering are generally divided into two main branches, one having to do with electrical power and the other, communications. The power group deals principally with larger equipment and apparatus employing heavy currents; the communications group involves more delicate equipment with smaller current values. Electrical Engineering thus includes the generation, transmission and distribution of electrical energy for light and power purposes, the application of d-c and a-c machinery to industry, and the operation of all types of electrical equipment, including telephone, radio and electronic apparatus.

This course of study provides a good theoretical background with practical applications. Instruction is carefully planned and the time is divided among lecture, laboratory testing, homework and reports.

FIRST YEAR					
First Semester			Second Semester		
<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>	<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>
M1	Algebra.....	2½	M2	Trigonometry.....	2½
*D1	Engineering Drawing...	2½	D2	Engineering Drawing....	2½
*P1	Physics I.....	2½	P2	Physics II.....	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus.....	2½
M5	Differential Calculus }	2½	EE2	A-C Theory.....	2½
EE1	D-C Theory.....	2½	ME2	Applied Mechanics II...	2½
*ME1	Applied Mechanics I...	2½			
		7½			7½
THIRD YEAR					
*ME3	Strength of Materials....	2½	ME4	Strength of Materials....	2½
EE5	D-C Machinery.....	2½	EE6	A-C Machinery.....	2½
EL1	D-C Machinery Lab....	2½	EL2	A-C Machinery Lab....	2½
		7½			7½
FOURTH YEAR					
EE7	Transmission Line Theory	2½	EE8	Electronics for Industry..	2½
*ME5	Heat Engineering.....	2½	ME6	Heat Engineering.....	2½
*EL3	Advanced Elec. Lab. I..	2½	EL4	Advanced Elec. Lab. II..	2½
		7½			7½

*No credit allowed until completion of second semester.

ELECTRONIC ENGINEERING**Leading to the Degree of Associate in Engineering**

This course is designed to train students for the various branches of the field of Electronics. The new advancements in the fields of radio, television, radar and sonar created by the urgencies of war have opened up greater opportunities for intellectual pioneering in these fields of engineering than in other branches of the profession.

Since electron tubes and circuits function around the principles of Electricity, this subject is adequately treated in the second year of the course. After a thorough study of the various types of electron tubes and their basic circuits in the third year, the fourth year is devoted to the various important fields that the student may wish to enter, such as Industrial Electronics, Communications, Broadcast Stations, and the new fields of Frequency Modulation and Television.

The whole course is a good balance between theory and practice, and experiments involving electron tubes and their applications are used through the entire last two years of the course. Laboratory reports and homework problems are used to supplement the experiments and lectures so that the student will absorb the material in a thorough manner.

FIRST YEAR					
First Semester			Second Semester		
<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>	<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>
M1	Algebra.....	2½	M2	Trigonometry.....	2½
*D1	Engineering Drawing....	2½	D2	Engineering Drawing....	2½
*P1	Physics I.....	2½	P2	Physics II.....	2½
		<u>7½</u>			<u>7½</u>
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus.....	2½
M5	Differential Calculus }		EE2	A-C Theory.....	2½
EE1	D-C Theory.....	2½	EE4	Electrical Machinery....	2½
P3	Electronic Physics.....	2½			
		<u>7½</u>			<u>7½</u>
THIRD YEAR					
*EE11	Electron Tubes and Circuits I.....	5	*EE12	Electron Tubes and Circuits II.....	5
EE9	Electrical Measurements.	2½	EL6	Electronic Lab.....	2½
		<u>7½</u>			<u>7½</u>
FOURTH YEAR (Sept. 1950 Only)					
*EE13	Communication Engineering II.....	5	†EE14	Freq. Modulation and Television.....	7½
EE17	Electronic Test Equipment and Measurement	2½			
		<u>7½</u>			<u>7½</u>
FOURTH YEAR (Beginning Sept. 1951)					
EE13	Radio Receivers.....	2½	EE14	Frequency Modulation..	2½
EE15	Radio Transmitters....	2½	EE16	Television.....	2½
†EL7	Advanced Electronic Lab. I.....	2½	†EL8	Advanced Electronic Lab. II.....	2½
†EE17	Industrial Electronics....	2½	†EL9	Industrial Electronics Lab.	2½
		<u>7½</u>			<u>7½</u>

*No credit allowed until completion of second semester.

**Two nights per week.

†Students elect one of these two courses.

INDUSTRIAL ENGINEERING**Leading to the Degree of Associate in Engineering**

Meeting the tremendous production requirements of World War II has called for every economy of time in man and machine hours to produce the maximum output. The scientific approach to the problems of industrial management has created an increasing demand for those trained in engineering and in the fundamentals of industrial management to assume administrative responsibility.

The competition of the postwar period will require continued emphasis on this phase of management and provide many opportunities for trained personnel in methods engineering, time study, production planning and control and other phases of industrial relations pertaining to men and machines.

FIRST YEAR					
First Semester			Second Semester		
<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>	<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>
M1	Algebra.....	2½	M2	Trigonometry.....	2½
*D1	Engineering Drawing....	2½	D2	Engineering Drawing....	2½
*P1	Physics I.....	2½	P2	Physics II.....	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus.....	2½
M5	Differential Calculus } ..	2½	ME2	Applied Mechanics.....	2½
*ME1	Applied Mechanics.....	2½	IE2	Work Simplification	2½
IE1	Job Evaluation and Merit Rating.....	2½			
		7½			7½
THIRD YEAR					
*ME3	Strength of Materials....	2½	ME4	Strength of Materials....	2½
*MD1	Machine Drawing.....	2½	MD2	Machine Drawing.....	2½
IE3	Time Study.....	2½	IE4	Production Planning and Control.....	2½
		7½			7½
FOURTH YEAR					
*ME9	Machine Design.....	2½	ME10	Machine Design.....	2½
*ME5	Heat Engineering.....	2½	ME6	Heat Engineering.....	2½
	Engineering Elective....	2½		Engineering Elective....	2½
		7½			7½

*No credit allowed until completion of second semester.

MECHANICAL ENGINEERING

Leading to the Degree of Associate in Engineering

The field of mechanical engineering is concerned with the harnessing of our power resources by means of machinery to perform useful work. In contrast to the civil engineer who deals primarily with static forces, the mechanical engineer is more concerned with the mechanics of motion or kinetics. And because moving parts require constant care and adjustment, the mechanical engineer has the task not only of designing and installing complicated machinery, but also of operating it efficiently after it has been installed.

Among the major branches of mechanical engineering are included power production engineering, machine and machine-tool design, railway mechanical engineering, automotive engineering, aeronautical engineering, refrigerating engineering, air conditioning engineering, and the numerous mechanical problems related to modern industrial operation.

This program of study is designed to give the student considerable training in the principles of mechanical engineering and equip him for advancement in the many subdivisions of this branch of engineering.

FIRST YEAR					
Course No.	First Semester	Class Hours	Course No.	Second Semester	Class Hours
	Course			Course	
M1	Algebra.....	2½	M2	Trigonometry.....	2½
*D1	Engineering Drawing....	2½	D2	Engineering Drawing....	2½
*P1	Physics I.....	2½	P2	Physics II.....	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus.....	2½
M5	Differential Calculus }		MD2	Machine Drawing.....	2½
*MD1	Machine Drawing.....	2½	ME2	Applied Mechanics.....	2½
*ME1	Applied Mechanics.....	2½			
		7½			7½
THIRD YEAR					
*ME3	Strength of Materials....	2½	ME4	Strength of Materials....	2½
ME7	Mechanism.....	2½	CE4	Hydraulics.....	2½
*ME5	Heat Engineering.....	2½	ME6	Heat Engineering.....	2½
		7½			7½
FOURTH YEAR					
*ME9	Machine Design.....	2½	ME10	Machine Design.....	2½
*ME11	Mechanical Engineering	2½	ME12	Mechanical Engineering	2½
	Laboratory.....			Laboratory.....	
	Engineering Elective....	2½		Engineering Elective....	2½
		7½			7½

* No credit allowed until completion of second semester.

DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION PROGRAM

THE LINCOLN TECHNICAL INSTITUTE in conjunction with the Evening School of Business, Northeastern University, offers a six-year program leading to the Degree of Bachelor of Business Administration in Engineering and Industrial Management. Graduates of the Lincoln Technical Institute holding the Degree of Associate in Engineering can complete the remainder of the program to qualify for the B.B.A. degree in two years. Upon special approval of the Dean, it is possible to arrange a plan whereby the two programs may be taken concurrently.

DEGREE PROGRAM

Lincoln Technical Institute:

Twelve approved full courses in chosen engineering program (any of the curricula listed on pages 29 to 34).

*Semester
Hours*

60

**School of Business:*

ACCOUNTING FOR MANAGEMENT	5
Cost Accounting for Management	5
WORK SIMPLIFICATION	2½
TIME STUDY	2½
JOB ANALYSIS AND EVALUATION	2½
Principles of Production	2½
PRODUCTION PLANNING AND CONTROL	2½
Quality Control	2½
Industrial Safety	2½
Business English	5
Business Economics	5
Statistics	2½
Purchasing	2½
Labor-Management Relations	2½
MANAGEMENT PROBLEMS AND POLICIES	5

Total required 30

**BUSINESS READINGS 5

†Occupational Experience 30

Total Semester Hours Required for Degree 125

* The courses indicated in heavy type are required for all students who have not previously taken them. The remainder of their programs may be selected from the other courses listed.

** There are no lectures in the Business Readings Course, which is designed to broaden the student's acquaintance with selected readings in the field of business.

† Occupational Experience is awarded to a maximum of ten semester hours for each of the last three years of the course. The award is based on the nature and quality of the student's occupation during this period.

ALPHABETICAL LIST OF SUBJECTS IN ALL CURRICULA

(All classes are held 7:00 to 9:30 P.M. unless otherwise stated)

<i>Course No.</i>	<i>Subject</i>	<i>Semester Given</i>	<i>Day</i>
EL3	Advanced Electrical Laboratory I.....	1	Monday
EL4	Advanced Electrical Laboratory II.....	2	Monday
EL7	Advanced Electronic Laboratory I.....	1	Wednesday
EL8	Advanced Electronic Laboratory II....	2	Wednesday
M1	Algebra.....	1, B, S	Monday
EE6	Alternating-Current Machinery.....	2	Wednesday
EL2	Alternating-Current Machinery Labora- tory.....	2	Friday
EE2	Alternating-Current Theory.....	2	Wednesday
*M3	Analytical Geometry.....	1	Monday
ME1	Applied Mechanics I.....	1	Friday
ME2	Applied Mechanics II.....	2	Friday
CE7	Concrete Design I.....	1	Thursday
CE8	Concrete Design II.....	2	Thursday
*M5	Differential Calculus.....	1	Monday
EE5	Direct-Current Machinery.....	1	Wednesday
EL1	Direct-Current Machinery Laboratory..	1	Friday
EE1	Direct-Current Theory.....	1	Wednesday
EE4	Electrical Machinery.....	2	Friday
EE9	Electrical Measurements.....	1	Monday or Wednesday
EE11	Electron Tubes and Circuits I.....	1	Wednesday and Friday
EE12	Electron Tubes and Circuits II.....	2	Wednesday and Friday
EL6	Electronic Laboratory.....	2	Monday
P3	Electronic Physics.....	1	Friday
EE8	Electronics for Industry.....	2	Friday
D1	Engineering Drawing I.....	1, B, S	Wednesday
D2	Engineering Drawing II.....	2, 3, S	Wednesday
EE14	Frequency Modulation.....	2	Monday
Ch1	General Chemistry I.....	1	Wednesday
Ch2	General Chemistry II.....	2	Wednesday
ChL1	General Chemistry Laboratory I.....	1	Friday (6.30-9.30)
ChL2	General Chemistry Laboratory II.....	2	Friday (6.30-9.30)
ME5	Heat Engineering I.....	1	Wednesday
ME6	Heat Engineering II.....	2	Wednesday
CE4	Hydraulics.....	2	Friday
EE17	Industrial Electronics.....	1	Wednesday
EL9	Industrial Electronics Laboratory.....	2	Wednesday
M6	Integral Calculus.....	2	Monday
IE1	Job Analysis and Evaluation.....	1	Wednesday (7-9)
ME9	Machine Design I.....	1	Monday or Thursday
ME10	Machine Design II.....	2	Monday or Thursday
MD1	Machine Drawing I.....	1	Wednesday
MD2	Machine Drawing II.....	2	Wednesday
ME11	Mechanical Engineering Laboratory I..	1	Monday or Thursday
ME12	Mechanical Engineering Laboratory II..	2	Monday or Thursday
ME7	Mechanism.....	1	Friday
Ch5	Organic Chemistry I.....	1	Monday
Ch6	Organic Chemistry II.....	2	Monday
ChL5	Organic Chemistry Laboratory I.....	1	Friday (6.30-9.30)
ChL6	Organic Chemistry Laboratory II.....	2	Friday (6.30-9.30)
Ch7	Physical Chemistry I.....	1	Wednesday
Ch8	Physical Chemistry II.....	2	Wednesday
P1	Physics I.....	1, S	Friday
P2	Physics II.....	2, S	Friday
IE4	Production Planning and Control.....	2	Thursday (7-9)
Ch3	Qualitative Chemistry.....	1	Wednesday
ChL3	Qualitative Chemistry Laboratory.....	1	Monday (6.30-9.30)

<i>Course No.</i>	<i>Subject</i>	<i>Semester Given</i>	<i>Day</i>
Ch4	Quantitative Chemistry	2	Wednesday
ChL4	Quantitative Chemistry Laboratory	2	Monday (6.30-9.30)
EE13	Radio Receivers	1	Monday
EE15	Radio Transmitters	1	Friday
ME3	Strength of Materials I	1	Monday
ME4	Strength of Materials II	2	Monday
CE5	Structural Analysis I	1	Friday
CE6	Structural Analysis II	2	Friday
CE9	Structural Design I	1	Monday
CE10	Structural Design II	2	Monday
CD1	Structural Drawing I	1	Wednesday
CD2	Structural Drawing II	2	Wednesday
	Sub-Freshman Mathematics	1	Tuesday and Thursday (7-10)
CE1	Surveying I	1	Thursday
CE2	Surveying II	2	Thursday
EE16	Television	2	Friday
IE3	Time Study	1	Wednesday or Friday (7-9)
EE7	Transmission Line Theory	1	Friday
CE3	Transportation Engineering	1	Friday
M2	Trigonometry	2, 3, S	Monday
IE2	Work Simplification	2	Monday, Tuesday or Thursday (7-9)

1 = First Semester; 2 = Second Semester; B = Division B (Jan. 2, 1951); 3 = Repeated for Division B about March 15; S = Summer Term.

* Analytical Geometry and Differential Calculus are given as one course.

ENGINEERING LABORATORY EQUIPMENT

CIVIL ENGINEERING LABORATORIES

A considerable amount of demonstration equipment including many models is available for use in the study of structures, hydraulics, sanitary engineering, highways, concrete and soil mechanics.

Surveying

The Department of Civil Engineering is provided with a variety of excellent and up-to-date equipment for field work. The instruments have been chosen to make possible the working out of advanced as well as elementary field problems, and to acquaint the students with the principal makes and types of instruments in general use.

Hydraulics and Sanitary Engineering

This laboratory, located on the first floor of the Botolph Building, is equipped with demonstration measuring devices for use in connection with the courses in hydraulics.

Complete equipment is also provided for studies of water softening, filtration, coagulation, analysis of water and sewage by the photometer, and analysis of bacterial condition of water and sewage. Also specialized equipment for advanced courses in sanitary research.

Concrete and Highway Engineering

Located on the first floor of the Botolph Building, this laboratory is equipped for conducting all the routine tests on cement and aggregate. The 300,000 lb. Riehle testing machine in the Mechanical Engineering Department is available for compression tests on concrete cylinders. Considerable equipment is available for conducting research work.

Equipment is also available for conducting a major portion of the accepted tests on bituminous materials as used in highway work. Soil Mechanics equipment consists of a general soil sampler, consolidometer, wet-mechanical gram-size analysis and a quicksand demonstration tank.

Aerial Photogrammetry

The apparatus in this laboratory may be used to instruct the students in the basic principles of photogrammetry, or may be used

to instruct the students in the more technical phases of photogrammetry such as horizontal control, vertical control, stereoscopic plotting, mechanical triangulation, and the tri-metrogon method of plotting.

CHEMICAL LABORATORIES

For experiments and investigations in Chemistry there are available three laboratories with the following equipment:

Analytical Chemistry

The laboratory for Analytical Chemistry is fully equipped for giving instruction in the usual undergraduate courses. Each student is supplied with the necessary laboratory glassware, porcelain, and the standard pieces of hardware. Special equipment of all needed types is available.

An adjoining balance room is equipped with balances suitable for quantitative analytical work.

Industrial Chemistry

This laboratory is equipped with high pressure steam, vacuum, and the facilities usually found in a chemical laboratory. The various instruments and other chemical equipment necessary for the examination, testing, and analysis of the raw materials, intermediate and final products of the various industries are at hand.

The electrical equipment includes a Kimley electro-analysis machine for the determination of copper, lead, nickel, and zinc; a Hevi-duty electric furnace for use in ignition and combustion work; and a Freas drying oven capable of adjustment for various temperatures. Power is available in a variety of D-C and A-C voltages.

Inorganic Chemistry

In the locker assigned to each student for his individual use are the articles needed more or less continually by him as he does his experiments in the laboratory sessions. He has a liberal supply of glass, porcelain, metal and other articles. Additional pieces of apparatus are issued from the stockroom or otherwise made available for use in particular experiments where they are needed.

The laboratories are equipped with general facilities appropriate to this course, such as gas, electricity, cold and hot water, fume hoods.

Organic Chemistry

The needed equipment is available. There are individual lockers and apparatus, fume hoods for general use, and special equipment, as required.

Drying operations are carried out with the aid of a steam-heated drying chamber and electrically heated drying oven. Steam lines on the benches supply the steam for steam distillations, eliminating the necessity of individual steam generators.

ELECTRICAL ENGINEERING LABORATORIES

The Electrical Engineering laboratories are located in the Botolph Building. Four laboratories are included in this unit: Dynamo, Measurements, Industrial Electronics, and Electronics and Communications.

Dynamo

This laboratory is provided with both 60 cycle three-phase 230 volt alternating current and 115-230 volt three-wire direct current. The equipment includes more than sixty motors and generators of different types together with the necessary auxiliary equipment to operate and test them. The motors and generators have been selected so as to reduce as much as possible the risk from high voltage while making available to the students a representative range of commercial apparatus.

Electrical Measurements

The equipment here is of two distinct types: first, that planned primarily for teaching principles of measurement, and secondly, that which is used in teaching advanced standardizing methods as well as for calibrating instruments in other laboratories of the University. Briefly, this laboratory is equipped for practically any work in electrical measurements except for the absolute determinations carried on in national standardizing laboratories.

Industrial Electronics Laboratory

This laboratory is designed to offer experiments in the application of electronic tubes and circuits to industry. In addition to basic electronic control circuits, there are larger pieces of equipment including the control of d-c generator voltage, d-c motor speed control, welding control, Thyatron and Ignitron rectifiers, electronic synchronization of a-c sources, and induction heating.

ELECTRONIC ENGINEERING LABORATORIES

The Electronics laboratories are located in Richards Hall and the Botolph Building.

Electron Tubes and Circuits

Equipment is available to study the operating of all types of electron tubes that are normally used, extending from diodes through to beam tubes, gas triodes, photocells, cathode ray tubes, and the various rectifier, amplifier and other basic circuits used with them, including vacuum tube voltmeters, regulated power supplies, resistance coupled amplifiers, inverse feedback amplifiers, etc.

Electronics and Communications

These laboratories are equipped with modern apparatus for work in the fields of electronics, networks, radio engineering, ultra-high frequency techniques and industrial electronics. The equipment includes Westinghouse Ignitron Rectifier, Industrial X-Ray Equipment, Motor Control Unit and equipment on Induction and Dielectric Heating.

Industrial Electronics

Equipment available for this course includes photocell and time delay relays, motor controls, cathode ray oscilloscopes, grid controlled rectifiers, oscillators, induction and dielectric heating equipment, and welding control equipment.

Communication Engineering

Equipment available for this course includes crystal oscillators, radio frequency amplifiers, frequency doublers, plate and grid modulation units, complete transmitters, radio frequency transmission lines. The frequency modulation apparatus includes balanced modulators, reactance modulators, phase modulators, discriminators, limiters, networks, antenna units, and complete receivers.

Apparatus for television includes sweep oscillators and amplifiers, synchronizing circuits, video amplifiers, multivibrators, counters, clipping, shaping and D-C insertion circuits, and television receiving equipment. A complete rack of Television Test Equipment is available. This includes a Sweep generator, Marker generator, Oscilloscope, Volt-ohmyst, etc.

In the newer fields such as Industrial Electronics and Television, equipment is added from time to time as practical experiments are developed.

INDUSTRIAL ENGINEERING LABORATORY

The Industrial Engineering Laboratory is located in Richards Hall and is devoted exclusively to methods engineering and time study analysis. This laboratory is completely equipped with the latest facilities and tools used by industrial engineers. Besides the general equipment consisting of benches, tables, lathes, jigs, fixtures, and racks, the laboratory has an ample supply of time study boards, stop watches and timers for time study work. There is also available complete motion picture equipment and microchronometers for micromotion work.

Students in the Department of Industrial Engineering also share in the use of the Mechanical Engineering Laboratories.

MECHANICAL ENGINEERING LABORATORIES

The Mechanical Engineering Department has a well-equipped laboratory, containing a large variety of modern machines and occupying over 10,000 square feet of floor space in the basement of Richards Hall. Special areas have been set aside and equipped for oil testing, mechanics research, and similar purposes. Auxiliary equipment is, of course, available for making all the usual tests and measurements.

Steam Power

This equipment includes a wide variety of steam engines, turbines, pumps, heat exchangers, and measuring instruments.

Testing Materials and Heat Treatment

For tension, compression, bending, and shearing tests, the laboratory is equipped with a 300,000 lb. capacity Riehle and a 50,000 lb. capacity Olsen, as well as several smaller testing machines. For other tests the laboratory has cement testers, torsional testing machines, impact testers, fatigue testers, hardness testers, extensometers, oil testing equipment calorimeters, as well as instruments for measuring speed vibration, temperatures, pressures and flow of fluids.

For heat treatment studies, an electric furnace and a gas-fired furnace are available. Equipment magnifying up to 2600 diameters is available for photographing crystalline structures, and the laboratory has polaroid equipment for photoelastic stress analysis.

Machine Shop

Adjoining the laboratory is a machine shop fully equipped with machine tools, welding equipment, and a small forge.

Internal Combustion and Aeronautics

The internal combustion equipment includes a number of gas and oil, automobile, airplane, and Diesel engines. Most of these are set up for running experimental tests, but several are available for dismantling and demonstration purposes.

An open circuit Venturi type wind tunnel having a three-foot throat and capable of 120 miles per hour wind velocity is available for experimental and demonstration work in the measurement of air forces on model planes and other structures. The tunnel is equipped with three component hydraulic balances having variable degrees of sensitivity.

In addition to the above equipment, there is an oil-fired steam boiler, hot-air furnace, unit heater, air conditioning units, centrifugal fan and several weirs for measuring water flow.

Metallography tests with microscopes and photographic apparatus may be performed.

DESIGN AND DRAFTING ROOMS

The School possesses large, light, and well-equipped drawing rooms for the carrying on of the designing and drafting which form so important a part of engineering work. These rooms are supplied with lockers containing the drawing supplies, and files containing blueprints, and photographs of machines and structures that represent the best practice. Drafting room blackboards are equipped with traveling straightedge devices which facilitate speed and accuracy in blackboard demonstrations.

PHYSICS DEPARTMENT

The Physics equipment has been carefully selected and is ample for demonstrating physical principles. The following apparatus is available for this purpose:

Motor driven Hyvac pump, mechanical oscillator, elasticity apparatus; Joly balance; barometers; pulleys; specific gravity bottles; torsion balance; eight-foot slide rule; wave apparatus; spherometers; organ pipes; tuning forks; Hartl optical disk; arc illuminator; projection lantern; refraction apparatus; metronome; lenses; calorimeters; hydrometers; thermometers; burners; apparatus for measuring latent heat, specific heat, expansion and mechanical equivalent of heat; optical bench and supplies; diffraction grating; spectroscopes; rheostats; galvanometers; magnets; electrostatic apparatus; electroscope; Wimshurst machine; induction coil; ammeters; voltmeters; resistance boxes; condensers; Wheatstone bridges; thermocouples; cathode ray oscilloscope; electronic switch; demonstration table equipped with water, compressed air, exhaust hood, 110 volts D.C., 110 volts A.C., and 220 volts A.C.

DESCRIPTION OF COURSES

THE LINCOLN TECHNICAL INSTITUTE reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

The Lincoln Technical Institute further reserves the right to change the requirements for graduation, tuition and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes which may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

CHEMISTRY

Ch 1-2 General Chemistry

This course will instruct in the fundamental ideas of matter and energy; properties of gases, liquids, and solids; molecular weights; theory of valence; classification of the elements; ionic reactions; chemistry of metals and non-metals; electrochemistry; the solution of all types of problems to illustrate practical applications; introduction to organic chemistry including industrial applications to petroleum, rubber, synthetic resins, plastics; chemotherapy; laboratory experiments demonstrating the principles discussed in class.

5 semester hours credit

ChL 1-2 General Chemistry Laboratory

This course consists of a series of laboratory experiments operated in conformance with the lecture course in General Chemistry (Ch 1-2).

6 semester hours credit

Ch 3 Qualitative Chemistry

The object of this course is not only to give instruction in analytical procedure and technique, but also to give the student a knowledge of the application of the fundamental concepts of solutions to the laboratory work. A portion of the time is devoted to the formulation of numerical terms which are essential to the understanding of the mass action law, ionic equilibria, solubility product, hydrolysis, and redox constants.

(Prerequisite, Ch 1-2)

2½ semester hours credit

ChL 3 Qualitative Analysis Laboratory

This course applies the material covered in Ch 3 to actual problems. After some preliminary experiments, certain procedures are combined and the separations and identifications made on both known and unknown solutions. Finally, these are combined into a complete, systematic scheme

which is applied to artificially prepared mixtures and industrial materials. Careful manipulations, thoroughness in observation, and accuracy in arriving at conclusions are expected of each student.

(Prerequisite, Ch L 1-2)

3 semester hours credit

Ch 4 Quantitative Chemistry

It is the purpose of this course to give to the student a realization of the scientific development of quantitative methods. Each of the major operations such as weighing, measurement of volumes, titration, filtration, ignition, and combustion, is considered from the standpoint of the theoretical principles involved, and with due consideration of the manipulative technique necessary.

This is followed by the combination of these operations and their application to actual analysis, including a comprehensive study of volumetric methods and of the more elementary parts of gravimetric analysis.

As the correct calculation of analytical results is of no less importance than the actual procedures of analysis, a number of problems forms a very important part of the course.

(Prerequisite, Ch 3)

2½ semester hours credit

ChL 4 Quantitative Analysis Laboratory

This is a laboratory course intended to illustrate by actual use the various analytical methods considered in Ch 4. After certain preliminary experiments designed to acquaint the student with the apparatus used, volumetric analysis, including acidimetry and alkalimetry, oxidation, reduction, and precipitation methods are taken up. This is followed by simple gravimetric analyses.

(Prerequisite, Ch L 3)

3 semester hours credit

Ch 5-6 Organic Chemistry

The first half of the year is devoted to a study of the properties, methods of preparation, chemical reactions and interrelations of the aliphatic carbon compounds. The hydrocarbons and their oxygen, halogen, sulfur, and nitrogen containing derivatives. An elementary consideration of reaction mechanisms and the effects of structure on reactivity. Industrial applications are discussed.

In the second half of the year the course considers the properties, methods of preparation and reactions of the various classes of aromatic compounds. Dyes, heterocyclic compounds, high polymers — natural and synthetic — and certain compounds of biological importance are considered. Reaction mechanisms and industrial significance are discussed.

(Prerequisite, Ch 1-2)

5 semester hours credit

ChL 5-6 Organic Chemistry Laboratory

This course is co-ordinated with the lecture course and deals with the preparations and reactions of the aliphatic and aromatic compounds.

5 semester hours credit

Ch 7-8 Physical Chemistry

This course covers the fundamentals of physical chemistry. The topics discussed include the three states of matter, the solution laws, surface

phenomena and colloids, thermochemistry, chemical equilibrium, ionic equilibrium, electrochemical cells and electrolysis, kinetics of chemical reactions, atomic and molecular structure, and radioactivity. Practical applications of these fundamentals are discussed whenever possible.

(Prerequisite, Ch 4)

5 semester hours credit

CIVIL ENGINEERING

CE 1 Surveying I

A course of lectures which treats the basic principles, such as taping, compass, theory and use of the transit as applied to both random and closed traverses, differential leveling, profile leveling, and double-rodged leveling. The D.M.D. and rectangular co-ordinate methods (of computing, plotting and running traverses) are stressed and especially as they may apply to such work or procedure as outlined by the Massachusetts Land Court.

The theory and use of the plane table (including the intersection problem, the resection problem, and three point problem) is also studied.

(Prerequisite, M 1-2)

2½ semester hours credit

CE 2 Surveying II

A course of lectures and problems on simple curves (railroad curves and circular arcs), vertical curves, compound curves and Stadia surveying. The rectangular co-ordinate method is presented in the study of horizontal control. The method of obtaining cross-sectional areas is taught. The student is instructed in the preparation of earthwork tables and the solution of the mass diagram and elementary problems.

(Prerequisite, CE 1)

2½ semester hours credit

CE 3 Transportation Engineering

This course consists principally of a discussion of modern highway engineering practices. The general features of routing, such as horizontal and vertical curves, rates of grade, superelevation, and traffic control are studied both from the viewpoint of safety and economics. Materials and tests of materials used in the construction of both highway and airport projects are discussed. Drainage problems and frost-action in subgrades are included in this discussion. The major portion of the course is spent on the construction procedure of the several types of roadways. These consist of the low-cost types such as stabilized soils, gravel, and crushed stone. The higher-cost types of roadways such as penetrated macadam, Portland Cement concrete, brick pavements, and asphaltic concrete are included. A brief discussion of airport design and layout concludes the course.

The application of the latest research development is considered throughout the entire course.

2½ semester hours credit

CE 4 Hydraulics

This course is a study of the principles of both hydrostatics and hydrodynamics. The subjects considered are the pressure on submerged areas together with their points of application; the laws governing the flow of fluids through orifices, short tubes, nozzles, weirs, pipe lines, and open channels; Reynolds numbers; and viscosity.

(Prerequisite, ME 1-2)

2½ semester hours credit

CE 5-6 Structural Analysis

First term in this theory course covers the equilibrium of forces and structures by analytical and graphical methods. Shear and moment diagrams are reviewed and expanded. Analytical and graphical analysis of roof trusses and mill building frames are worked out. The use of influence lines in analyzing stresses in beams, girders, and trusses is discussed as well as absolute maximum moment in beams.

The work in the second term consists of analyzing the stresses in various types of railroad and highway bridge trusses by means of move-up load method and equivalent uniform loadings. Counters and lateral forces on the trusses are discussed. Deflections of beams and trusses by method of work (dummy load) and moment-area method are studied. The course closes with an introduction to the slope and deflection method as well as moment distribution method of analyzing statically indeterminate beam and portal problems.

(Prerequisite, ME 3-4)

5 semester hours credit

CE 7-8 Concrete Design

A consideration of the theoretical and practical principles involved in the design of concrete and reinforced concrete structures. The following subjects are thoroughly discussed: the manufacture of Portland Cement; the specification requirements for fine and coarse aggregates; the design and analysis of reinforced rectangular beams, beams reinforced for compression, and "T" beams using both Tabular design and the Transformed Area methods. The principles involved in web reinforcement for diagonal tension as well as bond and shear stresses are discussed and problems worked out. Consideration is given to the interpretation of the Joint Committee Report on Recommended Practice and Standard Specifications for Concrete and Reinforced Concrete as well as the American Concrete Institute Building Code Requirements.

The second part of this course consists of the design and detailing of an interior bay of a building using one-way slabs, T-beams, and continuous girders. Composite beams and the various types of columns with both axial and eccentric heads as well as isolated and combined footings, both on soil and piles, are discussed and design problems worked out. The course concludes with a discussion and the design of retaining walls of the cantilever type.

(Prerequisite, ME 3-4)

5 semester hours credit

CE 9-10 Structural Design

This course consists of a study of the design of such structural units as steel beams, girders, columns, trusses, riveted connection and steel frames as a whole. Particular attention is given to the practical phases of construction and their relation to design. The design of structural timber is also studied. In the first half of the year the student is given many problems which he works out at home and in class and the last half of the year is usually devoted to the design and detailing of some larger, more complicated structures or portions of structures.

(Prerequisite, CD 1-2 and ME 3-4)

5 semester hours credit

CD 1-2 Structural Drawing

The course in Structural Drawing consists of making shop drawings of the various members of modern steel frames. After making drawings of structural sections and standard connections, the student is given data from which he makes framing plans and shop details using both riveted and welded construction. The problems usually covered are portions of a steel frame building, a bridge girder, and a roof truss.

(Prerequisite, D 1-2)

5 semester hours credit

ELECTRICAL ENGINEERING**EE 1 Direct-Current Theory**

This course is designed to give the student the required understanding of direct-current fundamental circuit theory. It deals with such concepts as electromotive force, current flow, resistance, conductance, circular mil, Ohm's law, series and parallel d-c circuits, d-c power and energy, primary and secondary cells, Kirchoff's laws, Superposition and Thévenin's Theorems, d-c instruments, magnetic and electrostatic circuits.

(Prerequisite, M1-2)

2½ semester hours credit

EE 2 Alternating-Current Theory

In this course lectures and problems are presented dealing with fundamental alternating-current circuit theory. Involved are sinusoidal electromotive forces and currents, effective value, power and energy, power factor, complex and polar notations, a-c series and parallel circuits, resonant conditions, and elementary polyphase systems.

(Prerequisite, EE 1)

2½ semester hours credit

EE 4 Electrical Machinery

This course is designed to introduce to the electronic student the elements of operation and control of rotating electrical machinery encountered in practice in connection with electronic control devices.

A study will be made of the shunt, series and compound d-c motors and generators with special emphasis placed on their principles of operation, characteristics, and methods of speed or voltage control. Also involved will be the a-c induction motor, both single-phase and three-phase, as well as elementary alternator theory; together with a consideration of the synchronous motor.

A study of the Amplidyne generator and other special devices used with electronic control circuits will also be made.

(Prerequisite, EE 1, EE 2)

2½ semester hours credit

EE 5 Direct-Current Machinery

This course involves the principles of operation and testing methods of d-c machinery. It includes the consideration of shunt, series, and compound motors and generators, with emphasis on problems of commutation, armature reaction, losses, efficiencies, stray power, ratings, methods of test as well as auxiliary equipment such as protective devices. The application of d-c machinery to industry is also involved.

(Prerequisite, EE 1)

2½ semester hours credit

EE 6 Alternating-Current Machinery

This course involves the theory of single-phase and polyphase transformer theory. Construction and principles of operation of the constant potential, constant current, autotransformer and other types are considered, with emphasis on the vector diagrams, core losses and methods of test. Attention is also given to the principles of operation of the a-c induction motor, synchronous motor, and alternator. The theory of operation, characteristics, load conditions and methods of testing are considered in detail.

(Prerequisite, EE 2)

2½ semester hours credit

EE 7 Transmission Line Theory

This course is concerned with the problems pertaining to the transmission and distribution of a-c energy. Typical transmission line problems are solved followed by a review of present-day protective and station equipment.

(Prerequisite, EE 6)

2½ semester hours credit

EE 8 Electronics for Industry

This course deals with the basic electronic tubes, especially those used in industry for control purposes, as well as electronic circuits for control purposes. A study of the diode, triode, Thyatron and photo-tube is made as well as amplifier theory and the problems of rectification, filtering and general control circuit applications.

(Prerequisite, EE 6)

2½ semester hours credit

EL 1 Direct-Current Machinery Laboratory

This course is designed to apply the information gained from course EE 5. A number of tests are performed on the d-c shunt, series and compound motors as well as tests on the d-c shunt and compound generators. Involved also are experiments on parallel operation of d-c generators, stray power and opposition tests.

(Prerequisite, EE 5)

2½ semester hours credit

EL 2 Alternating-Current Machinery Laboratory

This course offers the laboratory work paralleling the lectures of course EE 6 and includes experiments on a-c circuits, tests on the constant potential transformer, the constant current transformer, and the polyphase induction motor.

(Prerequisite, EE 6)

2½ semester hours credit

EL 3 Advanced Electricity Laboratory

This course includes tests on the synchronous converter, load tests on the alternator, including parallel operation of alternators, and experiments on such equipment as the synchronous motor and the brush-shifting motor.

In the second semester this laboratory course offers an introduction to the subject of the control of industrial equipment and processes by electronic means. Experiments are performed on the diode, triode, photo-tube and Thyatron, as well as the control of motor speed and generator voltage, automatic synchronizing, induction and dielectric heating, the Ignitron three-phase rectifier, the Thyatron six-phase rectifier, and resistance welding control.

(Prerequisite, EE 6)

5 semester hours credit

ELECTRONIC ENGINEERING**EE 9 Electrical Measurements**

The successful use of modern electronic equipment in the research or development laboratory and in many operational fields requires a knowledge of the equipment and techniques employed in making precise electrical measurements. This course is intended to give the student a thorough understanding of the procedures used in making accurate D-C and A-C measurements of voltage, current, power, resistance, capacitance, inductance, impedance, frequency, harmonic composition, D.B. gain and loss, etc. The factors limiting the precision of the results are analyzed.

(Prerequisite, M 6, EE 2)

2½ semester hours credit

EE 11 Electron Tubes and Circuits I

This course begins with a review of electron theory, then the theory of electron emission, by thermionic, photo-electric, secondary and field means, including the study of the construction and processing of the various types of cathodes. The construction and evacuation of tubes will be discussed. Then the diode tube with the space charge phenomena will be taken up, leading into the control of electrons in vacuum tubes. The static and dynamic characteristics of the various tube types will be covered. Equivalent amplifier circuits will be studied. Rectifier action will be covered and the addition of gas in vacuum tubes and the control of discharges in gas-filled tubes.

Now the analysis of circuits is started. First are rectifier circuits, both single and three phase, including choke and condenser input filters, and electronically regulated power supplies. Then the study of photocells, cathode ray tubes, multi-purpose and special tubes, followed by the vacuum tube as a control device.

(Prerequisite, EE 1-2)

5 semester hours credit

EE 12 Electron Tubes and Circuits II

This course starts with audio frequency amplifiers, first studying the voltage type and later power amplifiers. Included are the following topics: Distortion; Decibels; Input admittance; Resistance and Transformer coupling; D-C amplifiers; Photo-tube amplifiers; Current amplifiers; Volume control methods; Sources of noise; Maximum power output; Plate efficiency; Push-pull amplifiers; Classes A, AB, and B operation; and Feedback amplifiers.

The second half of the course is devoted to Radio frequency amplifiers of both voltage and power type. Included are Class B and C operation and their design; Neutralization; and Frequency multiplication.

(Prerequisite, EE 11)

5 semester hours credit

EE 13 Radio Receivers

This course is designed to give the student a thorough knowledge of radio receiver operation and practice. After briefly covering the early types of radio receivers such as the regenerative and radio frequency cir-

culits the super-heterodyne will be covered, both for broadcast and communications use. Particular attention will be paid to pre-selectors, mixers and convertors, intermediate frequency amplifiers, automatic volume control, and loud speakers. Audio amplifier and rectifier circuits will be reviewed as to use in receivers, as they will have been covered in a previous course. Attention will be given to problems of selectivity, sensitivity, stability and fidelity of receivers.

(Prerequisite, EE 12)

2½ semester hours credit

EE 14 Frequency Modulation

Fundamental theory of frequency modulation will be covered first, then the various methods of obtaining it in the transmitter and the special circuits found in the receiver. Ultra-high-frequency transmission characteristics will also be covered in this course.

(Prerequisite, EE 13, 15)

2½ semester hours credit

EE 15 Radio Transmitters

This course opens with the study of oscillators, including the various feedback circuits, crystal oscillators, parasitic oscillations, and special oscillator circuits. This is followed by a study of modulators, and then complete radio transmitters. The theory is completed with the study of radio wave propagation and antennas and transmission lines.

(Prerequisite, EE 12)

2½ semester hours credit

EE 16 Television

The basic principles of various methods of picture transmission such as wire photo, radio photo, facsimile and then television. Review of the mechanical methods used in early television. Electronic television systems, using the iconoscope and image orthicon for transmission, and cathode ray tube for reception. Synchronizing circuits and problems. Video amplifiers, deflecting circuits, television transmitters, receivers and antennas. Problems and technique of transmission of motion pictures and outdoor and studio scenes.

(Prerequisite, EE 13, 15)

2½ semester hours credit

EE 17 Industrial Electronics

In this course the use of electron tubes in industrial applications will be studied. Subjects include photocell relays, time delay relays, grid controlled rectifiers, motor control circuits, welding control circuits, Ignitron rectifier circuits, induction and dielectric heating circuits and applications, and the cathode ray oscilloscope in industrial applications.

(Prerequisite, EE 4, EE 12)

2½ semester hours credit

EL 6 Electronic Laboratory

The experiments in this course cover most of the subjects that have been covered by lecture in Electron Tubes and Circuits I and II. They include electron emission, gas diodes, triodes, tetrodes, pentodes, beam power tubes, Thyratrons, half and full wave rectifiers, voltage amplifiers,

resistance coupled cascade amplifiers, feedback amplifiers, radio frequency voltage and power amplifiers, photo cells, cathode ray tubes and oscilloscopes.

Laboratory reports are required on each experiment and the class is broken up into small groups so that each student has an adequate chance to participate in the experiment.

(Must be taken concurrently with EE 12)

2½ semester hours credit

EL 7 Advanced Electronic Laboratory I

The experiments in this course cover the theory subjects studied in the Radio Receiver and Transmitter courses. They include intermediate frequency amplifiers, frequency mixers, detectors, complete receivers, frequency multipliers, crystal oscillators, power oscillators, amplitude modulated r-f amplifiers, neutralization. An RCA Dynamic Demonstrator is used in the study of radio receivers. A one kilowatt radio phone transmitter operated into a dummy antenna is used in the final study of radio transmitters.

(Must be taken concurrently with EE 13, 15)

2½ semester hours credit

EL 8 Advanced Electronics Laboratory II

The experiments in this course cover the theory subjects studied in the Frequency Modulation and Television courses. They include Discriminators, Ratio Detectors, Limiters, Reactance Modulators, Balanced Modulators, Networks in FM circuits, Video Amplifiers, Television pulse generators and deflection circuits, frequency dividing circuits, such as counters and multivibrators. A complete television receiver is also studied as well as several typical complete FM units.

(Must be taken concurrently with EE 14, 16)

2½ semester hours credit

EL 9 Industrial Electronics Laboratory

This course includes experiments in all of the subjects listed in the lecture course. Preliminary talks are given on some of the complicated experiments.

(Prerequisite, EE 17)

2½ semester hours credit

INDUSTRIAL ENGINEERING

IE 1 Job Analysis and Evaluation

Basic principles underlying theory of wage calculation, job elements and their definitions, rating scales, writing job descriptions and specifications, selection of appropriate rating plan, setting up job factors and maximum point values, use of several methods of determining specific point values. Discussion of special cases from individual companies.

2½ semester hours credit

IE 2 Work Simplification

Process and operation analysis through the use of process charts, flow diagrams, operation charts, man-and-machine charts, micromotion study, principles of motion economy. Work place layout, labor-saving tools and equipment, laboratory development work. Elementary time study.

Setting up synthetic standards using elemental time values. Wage incentives, problems involved in the introduction of work simplification with particular emphasis upon employee morale. *2½ semester hours credit*

IE 3 Time Study

Introduction to wage incentives and current wage plans. History and development of time study, relation to motion and micromotion study, preliminary observation, technique of making time studies. Rating procedure, development of proper concept of "normal" performance, applying the rating and relaxation factors. Setting job and element standards, use of allowances, treatment of variables, introduction to standard data, synthetic standards, problems in the application of standards. Laboratory practice will supplement the classroom work. *2½ semester hours credit*

IE 4 Production Planning and Control

Factory organization, factory planning and layout, materials handling, storage, maintenance, power. Forecasting and budgeting, planning, scheduling, routing, dispatching, subcontracting. Quantity control, quality control, waste control, priorities, allocations, inventory control, records and reports. *2½ semester hours credit*

MECHANICAL ENGINEERING

ME 1-2 Applied Mechanics

(a) The subjects treated are collinear, parallel, concurrent, and non-concurrent force systems in a plane and in space; the determination of the resultant of such systems by both algebraic and graphical means, special emphasis being placed on the string polygon method for coplanar force systems; the forces required to produce equilibrium in such systems; first moments; and problems involving static friction, such as the inclined plane and the wedge.

(b) A continuation of Applied Mechanics (a) in which the subjects treated are continuation of first moments as applied to varying intensity of force and to the determination of center of gravities of areas and solids; second moments and the application to the determination of moment of inertia of plane and solid figures, radius of gyration, polar moment of inertia; product of inertia. Brief consideration is given to uniform motion, variable accelerated motion, rotation and plane motion.

(Prerequisite, M 2 and P 1)

5 semester hours credit

ME 3-4 Strength of Materials

This course comprises the study of the stresses and strains in bodies subjected to tension, compression, and shearing; common theory of beams with thorough description of the distribution of stresses, shearing forces, and bending moments; deflection of beams.

A study is made of the strength of shafting and springs; combined stresses in beams subjected to tension, compression, and bending; also strength of riveted joints, columns, and thin hollow cylinders, and brief consideration of strains and the relation of the stresses on different planes in a body.

(Prerequisite, ME 1-2 and M 6)

5 semester hours credit

ME 5-6 Heat Engineering

The fundamentals of thermodynamics are discussed in this course and include the general theory of heat and matter; first and second laws of thermodynamics; equations of state; fundamental equations of thermodynamics; laws of perfect gases; properties of vapors including use of tables and charts; and the general equation for the flow of fluids. Particular emphasis is given to the properties of steam, the use of the steam tables, and the Mollier diagram.

The course also embraces a study of fuels and combustion of fuels as applied to steam boilers.

The purpose of the course is to familiarize the student with the theory of heat as applied to prime movers.

Descriptions of many different kinds of apparatus used in the steam power plant such as engines, turbines, and auxiliary equipment, including pumps, condensers, heaters, fans, etc., comprise the major part of the course. A large number of problems related to the apparatus discussed are solved. In addition to the above, such items as draft, chimneys, coal and ash handling equipment, piping and valves, and technical power plants are studied. In addition to the study of steam apparatus, air compressors and internal combustion engines are discussed.

(Prerequisite, P 1-2)

5 semester hours credit

ME 7 Mechanism (I)

The object of this course is to acquaint the student with the principles of mechanism which are met in practice and in machine design. The topics considered are screw threads, pulley, and gear train calculations, both simple and epicyclic, cam design, conjugate curves, pure rolling contact, theoretical design of gear-tooth shapes, and limitations in involute gearing. The velocity and acceleration analysis of basic linkages are studied in detail.

(Prerequisite, MD 1-2)

2½ semester hours credit

ME 9-10 Machine Design

The design aspect of "Materials and Their Properties," "Stress Analysis," "Fastenings," "Power Transmission Equipment — Belts, Chains, Gears, Clutches, Brakes, etc.," "Shafting Design," Bearings, Springs, Cams, Welding, Riveting, is presented for discussion in class and the solution of problems outside of class.

Visual aids such as movies and slides are used, in addition to field trips, to familiarize the student with the standard practices of machine manufacturers.

(Prerequisite, ME 3-4)

5 semester hours credit

ME 11-12 Mechanical Engineering Laboratory

This course includes a series of experiments upon various kinds of equipment used in modern power plants to demonstrate under actual conditions the principles developed in the Heat Engineering course. Additional experiments which include calibration of instruments, performance of hydraulic equipment, steam equipment as used in power plants, heating

units for the household, air conditioning apparatus, internal combustion engines, and testing materials are performed. A complete report of each experiment is made.

(Prerequisite, ME 5-6)

5 semester hours credit

DRAWING

D 1-2 Engineering Drawing

This course is planned to meet the requirements of a class composed of students who have had no previous instruction in drafting, and also for those who may have had one or two years' work in preparatory schools.

Instruction is given in the testing, use and care of the instruments and drawing supplies, and solutions are required for problems which are presented on about thirty drawing sheets. The topics studied in these sheets include technique practice, lettering, geometric construction, orthographic projections, auxiliary views, development of objects, isometric, cavalier and cabinet drawing, intersections, sections, helix and application, screw threads, dimensions and inking. A number of practical problems, pertaining to the professional courses to be taken, in which drawing is the application, are also given.

These give the student a thorough training in the fundamental principles of Engineering Drawing, so that he may easily do the drafting required in his professional course. A short lecture is given at the opening of each class based on the work at hand, and individual instruction is given during the remainder of the class period.

5 semester hours credit

MD 1-2 Machine Drawing

This course is conducted on a lecture-laboratory basis with the student working out problems under the supervision of the instructor. The fundamental principles of representing the shape and of specifying the size of such machine elements as castings, forgings, fabricated weldings, gears, cams, etc., are taught. The mediums used are multi-view orthographic projection, auxiliary and sectional views, along with the appropriate dimensioning techniques. Lectures and reading assignments are correlated with the classroom problems and cover such topics as the drawing techniques applicable to the particular study being made, American Standard drafting-room practices, methods and materials of machine production, fractional and decimal dimensioning systems, fasteners, bearings, lubrications, pulleys, piping, clutches, gears, cams, methods of reproduction, etc.

The types of drawings made and analyzed include preliminary machine sketches and assemblies, dimensioned detail working drawings from machine assemblies, assembly drawings from machine details, problems in gear and cam construction.

Drawing examinations covering the principal drawing and dimensioning techniques, and short written quizzes covering the lecture and textbook materials are given periodically throughout the course.

(Prerequisite, D 1, 2)

5 semester hours credit

MATHEMATICS

Sub-Freshman Mathematics

This course is devoted to a thorough study of Algebra I and Plane Geometry.

M 1 Algebra

Although the primary purpose of this course is to lay a thorough groundwork for the subsequent courses in Analytical Geometry, Calculus, and Applied Mechanics, it is nevertheless a complete unit in itself, and will enable the student to handle a considerable number of the problems arising in engineering practice.

Proceeding from a rapid review of the fundamental operations of Algebra, the work continues with a thorough study of fractions, functions, linear and quadratic equations, equations in quadratic form, graphs, exponents, complex numbers, binomial expansion, variation, and equations of higher degree than the second.

(Prerequisite, first course in Algebra and Plane Geometry)

2½ semester hours credit

M 2 Trigonometry

This course includes the solution of all triangles by both natural and logarithmic functions, identities, radian measure, principal values and the solution of trigonometric equations. Particular attention is given to the applications of Trigonometry to engineering practice.

(Prerequisite, M 1)

2½ semester hours credit

M 3 Analytical Geometry

This course consists of a study of the straight line, circle, and conic sections, using rectangular cartesian co-ordinates only; also the graphs of trigonometric, logarithmic, and exponential equations.

(Prerequisite, M 1-2)

with M 5, 2½ semester hours credit

M 5 Differential Calculus

The work in the course consists of differentiation of algebraic, trigonometric, exponential, and logarithmic functions, both explicit and implicit; slopes of curves; maxima and minima; derivatives of higher order; velocity and acceleration in rectilinear motion.

(Prerequisite, M 3)

with M 3, 2½ semester hours credit

M 6 Integral Calculus

This is a continuation of Calculus M 5, and deals with integration as the inverse of differentiation as well as the limit of summation. The topics covered are methods of integration; use of integral tables; definite integrals; double integrals; areas in rectangular co-ordinates; length of curves; areas of surfaces of revolution; volumes of solids; centroids of plane areas; moment of inertia.

(Prerequisite, M 5)

2½ semester hours credit

PHYSICS

P 1 Physics I

This course covers the principle of mechanics. Some of the topics covered are force; energy; work; statics; elasticity; linear, rotational and harmonic motion; liquids and gases.

Each lecture includes a demonstration period and a problem period in which the student learns the practical application of the physical laws being studied.

2½ semester hours credit

P 2 Physics II

This course begins with the study of wave motion and sound, and is followed by heat, light, and electricity.

The section in heat includes thermometry, expansion, calorimetry, behavior of gases, vaporization and transfer of heat. Under the subject of light are reflection, refraction, dispersion, diffraction and interference, lenses, and optical instruments. The study of electricity includes magnetism, electrostatics, resistance, capacitance, inductance, alternating currents, and series and parallel circuits.

The same lecture procedure is followed with respect to demonstrations and problems as is done in P 1.

(Prerequisite, P 1)

2½ semester hours credit

P 3 Electronic Physics

Designed especially for students taking the Electronic Engineering curriculum, this course deals with the fundamental principles of waves, with particular applications to sound, light, and electromagnetic radiation in general. Interference, diffraction, and polarization will be treated in detail. The latter part of the course will be devoted to the study of antennas.

(Prerequisite, P 2)

2½ semester hours credit

THE LINCOLN TECHNICAL INSTITUTE

360 Huntington Avenue

Boston 15, Massachusetts

To the Dean:19.....

I hereby apply for admission to the
 (First name) (Middle name) (Last name)

Lincoln Technical Institute in the term beginning in and submit the following information:
 (Sept.—Jan.—June)

.....
 (Street address) (Town) (State) (Phone)

Age..... Date of Birth..... Married ☐ Single ☐

Citizen of U. S. Yes ☐ No ☐

Name of your employer..... Nature of your employment.....

Business address..... Business Telephone.....

I have attended, including other schools of the Northeastern University system, the following schools above grammar grade (if attendance at a university, designate school):

NAME OF SCHOOL	LOCATION — CITY, STATE	Chk. Yrs. Attended				Date Left	Date of Graduation	Degree if any
		1	2	3	4			

I request advanced standing credit for previous college work completed at (name of institution)..... I shall furnish transcript.
 I shall furnish transcript.

I wish to enroll for the following:

- ☐ Curriculum, leading to the Degree of Bachelor of Business Administration in Engineering and Management, offered by the School of Business, Northeastern University, and the Lincoln Technical Institute.
- ☐ Curriculum leading to the Degree of Associate in Engineering.
- ☐ Curriculum leading to the Diploma in Chemistry.
- ☐ I do not wish to pursue a complete curriculum but, as a special student, wish to enroll in the following courses:
.....

As part of the program checked above, I wish to elect the following major:

- ☐ CHEMISTRY
- ☐ CIVIL-STRUCTURAL ENGINEERING
- ☐ ELECTRICAL ENGINEERING
- ☐ I wish to take the Sub-Freshman program with the major checked above.
- ☐ ELECTRONICS ENGINEERING
- ☐ INDUSTRIAL ENGINEERING
- ☐ MECHANICAL ENGINEERING

Please answer the following questions:

- Have you passed a course in First Year Algebra?..... If so, give approximate year.....
- Have you passed a course in Plane Geometry?..... If so, give approximate year.....
- Have you passed a course in Elementary Chemistry?.... If so, give approximate year.....
(for Chemistry students only)

Are you to take these courses under the G. I. Bill of Rights?..... Yes ☐ No ☐

Application Accepted by

.....
Signature of Student.....

A fee of five dollars must accompany this application. This fee is not returnable.

THE LINCOLN SCHOOLS

Evening Sessions
OPEN TO MEN AND WOMEN

LINCOLN TECHNICAL INSTITUTE

Degree of Associate in Engineering Programs

Courses leading to the Degree of Associate in Engineering are offered in the following major fields:

CHEMISTRY

CIVIL-STRUCTURAL

ELECTRICAL

ELECTRONICS

INDUSTRIAL

MECHANICAL

Degree of Bachelor of Business Administration Program

A six-year program conducted in conjunction with Northeastern University School of Business is available which leads to the Degree of B.B.A. in Engineering and Management awarded by Northeastern University.

Special Programs

For those who do not wish to take one of the regular programs, special programs consisting of one or more courses can be arranged to meet individual needs.

LINCOLN PREPARATORY SCHOOL

Individual high school subjects to meet particular needs, or leading to a diploma, are available.

Students may enter in September, January, and June.

*For further information write, indicating the School in which
you are interested*

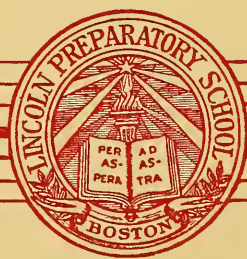
THE LINCOLN SCHOOLS

360 HUNTINGTON AVENUE, BOSTON 15, MASSACHUSETTS

Telephone : KEnmore 6-3177

1950-1951
EVENING SESSIONS
FIFTY-THIRD YEAR

**LINCOLN
PREPARATORY
SCHOOL**



THE LINCOLN PREPARATORY SCHOOL

Evening high school courses are conducted on day-school standards by a competent faculty in a school which enjoys an excellent reputation among colleges and preparatory schools for its high scholastic performance as preparation for:

Employment in Business and Industry

Courses that offer sound general training whereby students develop the ability, poise, and self-confidence that make for success for those who do not plan further study on the college level. The competition of the reconversion period in business and industry will require the fullest development of one's abilities.

Colleges

Courses preparing student for admission to colleges —

By High School Diploma

By College Entrance Board Examinations

By Certification (without examination)

Professional Schools

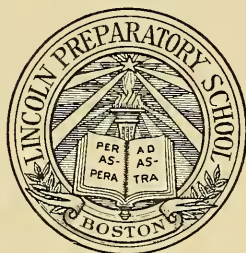
High school courses designed to prepare students for entrance to colleges of Engineering, Business, and the pre-legal college programs preparing for entrance into Schools of Law, both day and evening.

Nurses' Training in Hospitals

A high school course which prepares students to enter upon a training program in accredited hospitals.

Courses which prepare graduate nurses who are not high school graduates to fit themselves for graduate study, and for teaching and administrative positions in hospitals.

LINCOLN PREPARATORY SCHOOL



The School is situated at the entrance to the Huntington Avenue subway within nine minutes
of Park Street and easily accessible from all points

EVENING SESSIONS

Admits Men and Women

EFFECTIVE METHODS OF INSTRUCTION

Adapted for Evening Students

CALENDAR, 1950-1951

Summer Term, June, 1950–September, 1950

JUNE 1	Classes begin.
JULY 4	Legal holiday. No classes.
SEPTEMBER 4	Legal holiday. No classes.
SEPTEMBER 11–14	Final examinations.

School Year, September, 1950–May, 1951

SEPTEMBER 1–18	Registration period.
SEPTEMBER 25, 26	Classes begin.
OCTOBER 12	Legal holiday. No classes.
NOVEMBER 11	Legal holiday. No classes.
NOVEMBER 23	Legal holiday. No classes.
DECEMBER 21	Last session before Christmas recess.

1951

JANUARY 2	Classes resume.
FEBRUARY 22	Legal holiday. No classes.
APRIL 19	Legal holiday. No classes.
MAY 8–24	Final examinations.

Winter Term, January, 1951–May, 1951

JANUARY 2	Classes begin.
FEBRUARY 22	Legal holiday. No classes.
APRIL 19	Legal holiday. No classes.
MAY 22–24	Final examinations.

OFFICE HOURS

September 5, 1949–June 24, 1950

Monday through Friday.....	8:45 A.M.–9:00 P.M.
Saturdays.....	8:45 A.M.–12 NOON

June 26, 1950–August 19, 1950

Monday and Thursday.....	8:45 A.M.–9:00 P.M.
Tuesday, Wednesday and Friday.....	8:45 A.M.–5:00 P.M.

August 19, 1950–June 30, 1951

Monday through Friday.....	8:45 A.M.–9:00 P.M.
Saturdays.....	8:45 A.M.–12 NOON

INTERVIEWS

Prospective students, or those desiring advice or guidance regarding any part of the school work, are encouraged to arrange for personal interviews with the Principal or other officers of instruction. Career planning through competent guidance provides an understanding of requirements for reaching vocational objectives and develops that definiteness of purpose so vital to success.

BOARD OF TRUSTEES

ROBERT GRAY DODGE, *Chairman*

FRANK LINCOLN RICHARDSON, *Vice-Chairman*

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CHANDLER HOVEY	ROBERT TREAT PAINE STORER
MAYNARD HUTCHINSON	JAMES VINCENT TONER

OFFICERS OF ADMINISTRATION

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D., *President*

EVERETT AVERY CHURCHILL, A.B., Ed.D., *Vice-President*

ALBERT ELLSWORTH EVERETT, B.C.E., M.B.A., S.B.
Director of Evening Program

DONALD HERSHEY MACKENZIE, B.Ch.E., S.B., Ed.M., *Principal*

OFFICE STAFF

JEAN C. PETTIPAS, *Administrative Secretary*

MARJORIE W. ROBERTSON, *Secretary*

RUTH E. DOLAN, *Secretary-Recorder*

ANNE M. MOORE, *Typist*

HELEN W. CARR, *Bookkeeper*

FACULTY

The faculty of the Lincoln Preparatory School has been carefully chosen from the leading high and preparatory school teachers in Boston and its vicinity. They are college trained men who have proved their ability in their various fields of specialization. They are selected on the basis of their ability to convey knowledge to others in an interesting, inspiring and effective manner. Most of these men have served with the School for many years. They have an understanding of and a sincere respect for evening school students and take a personal interest in their ambitions and success.

WALTER ALFRED BALDWIN

Appointed 1910

A.B. Ohio Wesleyan University, 1906; graduate study University of Chicago and Harvard University; Head, Department of Mathematics, Chillicothe High School, Ohio, 1906-08; Head, Department of Mathematics, Mansfield High School, Ohio, 1908-10; Head, Science Department, Huntington School for Boys, Boston, 1912-14; Instructor in Physics and Chemistry, Lincoln Preparatory School, 1910-.

Chemistry

G. WARREN BATES

Appointed 1949

B.S. Massachusetts Institute of Technology, 1926; M.A. Boston University, 1938; Instructor in Mathematics, Mercersburg Academy, Mercersburg, Pa., 1926-28; Newburyport High School, Newburyport, Mass., 1928-30; Medford High School, Medford, Mass., 1930-.

Mathematics

WILLIAM TILDEN BENTLEY

Appointed 1916

A.B. Harvard University, 1907; Submaster, Malden High School, 1914-24; Principal, Belmont School, 1924-29; Principal, Charles A. Daniels School, 1929-41; Principal, Glenwood School, 1941-.

English

RICHARD P. BONNEY

Appointed 1945

A.B. Harvard University, 1915; M.A. Harvard University, 1916; Head, History Department, Dorchester High School for Boys, 1930-.

History

CARL F. CHRISTIANSON

Appointed 1933

A.B. Wesleyan University, 1923; Tilton School, New Hampshire, 1923-24; Abington High School, 1924-27; Huntington School for Boys, 1927-.

History, Government, Economics

MICHAEL D'AMELIO

Appointed 1942

A.B. Harvard College, 1922; Instructor, Brookline High School, 1922-26; Instructor, Boston Latin School, 1926-27; Instructor in Mathematics, English High School, 1927-.

Mathematics

GEORGE R. FAXON

Appointed 1948

A.B. Harvard University, 1928; M.S. University of New Hampshire, 1932; Graduate study, Boston University, London School of Economics, University of Marburg, Germany; Teacher of Mathematics, Emerson School for Boys, 1929-31; Teacher of Mathematics, Marblehead High School, 1931-32; Teacher of Mathematics, Roxbury Memorial High School, 1933-; Assistant Director, Vocational and Educational Guidance, Biarritz American University, 1945.

Mathematics

WILLIAM D. FINAN

Appointed 1946

A.B. Boston College, 1938; M.A. Columbia University, 1941; Instructor in English and Mathematics, Summit, New Jersey, 1938-42; Instructor in Mathematics, Weeks Junior High School, Newton, Mass., 1948-.

Mathematics

PHILIP L. HOLMES

Appointed 1945

A.B. Harvard University, 1924; M.A. Harvard University, 1934; Instructor in German, Trinity College, Hartford, Connecticut, 1925; Instructor in Modern Languages, Somerville High School, 1933-.

Spanish and German

PERCY EDWARD JONES

Appointed 1923

Sloyd Training School, 1920; B.S. Boston University, 1930; Instructor in Mathematics and Drawing, Huntington School for Boys, 1919-.

Mathematics

A. ROBERT KELMAN

Appointed 1930

B.B.A. Boston University, 1925; M.A. (History), Boston College Graduate School, 1941; School of Education, Harvard University; Instructor, Quincy Senior High School, 1921-25; Instructor, Weaver High School, Hartford, Connecticut, 1925-26; Instructor, Bulkeley High School, Hartford, Connecticut, 1926-29; Head of the Department of Social Studies, The Senior High School, Watertown, 1930-.

History

ALFRED BLANCHARD KERSHAW

Appointed 1928

A.B. Amherst, 1904; A.M. Amherst, 1907; Instructor, The Allen School, West Newton, 1908-09; Instructor in English, Brockton High School, 1909-11; Master, English High School, Boston, 1911-.

English

ARTHUR O. MCCARTNEY

Appointed 1945

B.S. University of New Hampshire, 1915; Graduate study at Harvard, 1940-41; Instructor in Mathematics and Physics, Watertown High School, 1941-45; Instructor in Mathematics, Framingham High School, 1945-46; Instructor in Physics and Mathematics, The New Preparatory School, 1946-.

Physics

JOHN W. MCGUCKIAN

Appointed 1944

B.Sc. Massachusetts State College, 1931; M.Ed. Boston Teachers College, 1937; Instructor, Jamaica Plain High School, 1931-42; Junior Master, Roslindale High School, 1942-46; Junior Master, Jamaica Plain High School, 1946-.

Biology

RICHARD LAWRENCE MCGUFFIN

Appointed 1928

B.A. Boston University, 1920; M.A. Boston University, 1925; Ed.M. Harvard Graduate School of Education, 1926; Instructor in English, Lebanon Boys' School, Suk-el-Gharb, Syria, 1921-24; Directeur, Foyer Des Garcons, Tunis, North Africa, 1927-28; French Master, Boston Latin School, 1929-.

French

THEODORE WOODS NOON

Appointed 1922

A.B. Yale College, 1896; M.A. Yale University, 1898; Exhibitioner, Emmanuel College, University of Cambridge, England, 1906-07; Master, Lawrenceville School, Lawrenceville, New Jersey, 1908-18; B.D. University of Chicago, 1913; S.T.M. Boston University, 1922; Ed.M. Harvard University, 1924; Instructor in Lincoln Preparatory School and Huntington School for Boys, Boston, 1922-.

Latin

DEANE STANFIELD PEACOCK

Appointed 1931

A.B. Bowdoin College, 1917; A.M. Bates College, 1927; Ed.M. Harvard University, 1932; Principal, Oakland High School, Maine, 1919-24; Principal, Freeport High School, Maine, 1924-31; Junior Master, English High School, Boston, 1932-45; Master, English High School, 1945-.

English

OLAN A. RAND

Appointed 1943

B.A. Washington and Lee, 1926; Graduate study, University of Vermont; Teacher, Franklin High School, New Hampshire, 1926-28; Teacher, Spaulding High School, Barre, Vermont, 1929-43; Instructor, The Huntington School, 1943-.

English

BARNET RUDMAN

Appointed 1942

A.B. Harvard University, 1921; Ed.M. Boston Teachers' College, 1934; Instructor in Mathematics, Rocky Grove High School, Franklin, Pennsylvania, 1921-23; Instructor in Mathematics, Pittsfield High School, 1923-28; Head of the Department of Mathematics, 1927-28; Instructor in Mathematics, South Boston High School, 1929-32; Instructor in Mathematics, English High School, 1932-.

Mathematics

ALFRED LORING SKINNER

Appointed 1927

A.B. Harvard University, 1919; Instructor in Mathematics, Wickford, Rhode Island, 1919-20; Instructor in Mathematics, North Andover, Massachusetts, 1920-23; Instructor in Mathematics, Huntington School for Boys, Boston, 1923-.

Mathematics

HISTORICAL STATEMENT

The Lincoln Preparatory School, affiliated with Northeastern University and known for many years as the Northeastern Preparatory School, had its real beginning in 1897 in the separate evening courses offered in History, Science, and other subjects of a cultural nature, and in certain trade courses intended to benefit men engaged in various occupations.

Gradually the trade courses were discontinued and the remaining subjects were welded into a regular high school program, upon the completion of which a standard high school diploma was awarded.

All classes in the Lincoln Preparatory School are held in the evening and are especially designed to meet the needs of those who are employed during the day.

The primary purpose of the School has been effective preparation of students for college entrance. For this reason constant attention has been paid through the years to the maintenance and improvement of standards.

In 1925 women were admitted to classes on the same basis as men. The School was accredited by the New England College Entrance Certificate Board, later called the New England College Admissions Board, from 1924 until the Board disbanded in 1948. This was a marked distinction in the case of an evening school, and an expression of confidence that day-school standards were maintained. The School today offers curricula in the general, scientific, and classical fields. The enrollment has increased from fewer than fifty students to almost five hundred, of whom two-fifths are women. The faculty has been increased until it now numbers eighteen men of wide experience and training, drawn from the leading day preparatory and high schools of Metropolitan Boston.

Through the Lincoln Preparatory School many men and women have been able to solve their problems and to secure that education which has enabled them to succeed in the work for which they are adapted by ability and interest. Without these facilities many of these alumni would still be occupying minor positions with little opportunity for advancement on account of lack of training.

THE LINCOLN PREPARATORY SCHOOL

Characteristics of the School

Before a prospective student makes a final decision regarding the evening school he wishes to enter, he should ascertain some of the characteristics of a good preparatory school. Following are the outstanding characteristics of the Lincoln Preparatory School:

1. It is non-proprietary, and organized exclusively for service to students, the income being devoted to that end rather than being organized for profit.
2. Adequate fees are charged to insure the employment of the best teachers attainable and to provide constant improvement in the educational processes.
3. Scholarship funds are available to assist deserving and needy students who cannot meet the fees that must be charged if high standards are to be maintained.
4. It has a trained and experienced faculty; that is, the men who form its staff are teachers of experience with long practice in dealing with the individual problems of students.
5. All work is conducted on a regular classroom basis to meet the approval of higher institutions.
6. The size of the classes is such as to permit reasonably individualized attention.
7. The courses are conducted so that the content of each course is thoroughly covered in order that it may be of the maximum value to the student, not only in the interests of his personal growth, but as preparation for further study.
8. The student body is adequately prepared for the type of instruction which is to be imparted in the classroom. The level of achievement is not lowered by the admission of unfit students.
9. High quality of performance is maintained in the classroom, and students bring to bear on their studies an interest and enthusiasm which permit all work to be conducted on a high, qualitative plane. Classes are not conducted to be a vehicle by which students may obtain credit by easy and slipshod methods. Credit is awarded only when the quality of the student's work meets the definition of Requirements of the College Entrance Examination Board.
10. Its graduates have proved successful in college, in the professions, and in business life.
11. There are adequate laboratories, classrooms, and other facilities.
12. The employment of a full-time administrative organization affords opportunities for skilled educational and vocational guidance.

Aims of the School

The aims of the Lincoln Preparatory School may be classified as follows:

1. The offering of educational opportunities to men and women by methods of instruction carefully adapted to the needs of adult students.
2. The providing of this instruction at convenient evening hours, so that the student need not leave his or her present employment while obtaining an education.
3. The conducting of the school work on such a high qualitative plane that those students who wish to prepare for college may be adequately prepared for entrance examinations, or for entrance by certificate if their ability and performance warrant.
4. The offering of a general program to those who do not plan to enter college, that they may develop a taste for the better things in life and that they may advance to a larger personal growth.
5. The offering of special courses for those who have particular needs related to specialized occupations.
6. The selection of the most competent and experienced faculty available.
7. The maintenance of the excellent work which has earned for the School the excellent reputation it enjoys among colleges and secondary schools.
8. The personal interest of every school officer in the problem of the individual student.

Location of the School

The work of the School is conducted in the following five buildings of Northeastern University situated on Huntington Avenue just beyond Massachusetts Avenue at the entrance to the Huntington Avenue subway.

Richards Hall is situated at 360 Huntington Avenue. This building is adequately equipped with classroom, drawing room, and laboratory facilities. In the basement are the checkroom and the bookstore. The School office is located on the first floor.

Science Hall. In this building are located the Chemical Engineering and Biological laboratories, and eighteen classrooms and lecture halls.

The East Building, in which are situated the University library, several classrooms, and the Chemical laboratories.

The Btolph Building is situated in the rear of the East Building and contains several classrooms and the Electrical laboratories.

The Student Center Building contains administrative offices and facilities for student activities. There are reading and study rooms, lounges, additional classrooms and an auditorium seating 1,350 for student convocations.

Student Body

The students of the Lincoln Preparatory School are men and women of earnest purpose, who have come to recognize the value of education but

who through force of circumstances have been unable to complete a high school course. The ages of the students range *from sixteen to fifty-three*, with the average age *twenty-two*.

Some students are attempting to increase their vocational opportunities; some are completing a high school education begun elsewhere but interrupted; some are beginning here their high school work; some are adding to their training cultural or practical subjects which were formerly omitted; some are undertaking special courses to prepare them for increased usefulness in their work. In fact, the School is ready to serve students of all ages at a point where they need real service. The student body represents also men and women from all walks of life.

Alumni

The Alumni of the Lincoln Preparatory School are excellent witnesses of the work the School has done and is doing.

Many of our graduates are engaged in the various professions, such as Engineering, Law, Medicine, Teaching, and Dentistry, or are engaged in successful business activities and in public life. Furthermore, the School has been of benefit to many who did not complete our graduation requirements but obtained here the credits necessary for college entrance or for some other specific purpose, having completed elsewhere part of their high school training.

Women graduates of this School are in the hospital training schools of the State or have graduated therefrom. Some occupy teaching and administrative positions in our hospitals. Many others have proceeded to colleges and professional schools to prepare for positions in teaching, library science, and business.

Our former students are in colleges and professional schools scattered across the country. The following are some of the colleges that have been attended by Alumni of the Lincoln Preparatory School:

HARVARD UNIVERSITY
TUFTS COLLEGE
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY
BOSTON UNIVERSITY
UNIVERSITY OF MICHIGAN
JACKSON COLLEGE
PURDUE UNIVERSITY
UNIVERSITY OF ALABAMA
COLUMBIA UNIVERSITY
COLBY COLLEGE
ATLANTIC UNION COLLEGE

SIMMONS COLLEGE
UNIVERSITY OF MAINE
CLARK UNIVERSITY
UNIVERSITY OF MASSACHUSETTS
UNIVERSITY OF CHICAGO
SYRACUSE UNIVERSITY
YALE UNIVERSITY
DARTMOUTH COLLEGE
BOWDOIN COLLEGE
BATES COLLEGE
NORTHEASTERN UNIVERSITY
UNIVERSITY OF NEW HAMPSHIRE

GENERAL INFORMATION

Libraries

In the East Building a large and well-equipped library is available for the use of students. The reading rooms are open from 9 A.M. to 7:30 P.M. on weekdays, and from 9 A.M. to 12 NOON on Saturdays. Students have also the privilege of securing books from the Boston Public Library and its branches. To obtain this privilege application should be made at the School office, where the necessary blanks will be furnished.

Textbooks and Supplies

The Bookstore, which is situated in Richards Hall, is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the School may be purchased at the Bookstore.

Railroad Tickets

Vouchers for half-fare tickets on the Metropolitan Transit Authority are issued by the School office. The railroad systems entering Boston issue students' tickets to students under twenty-one years of age. Veterans, regardless of age, are eligible for reduced rates on most of the railroads. Applications for these may be obtained at a railroad office and presented at the School office for signature.

Visitors

Visitors are always welcome at one class session in any department. Those who wish to visit any of the classes should call at the School office and obtain a visitor's card signed by the Principal.

Educational Guidance

Prospective students or those desiring advice or guidance with regard to any part of the school work or curricula, or who wish assistance in the solution of their educational problems, should note the fact that interviews are available without obligation, and that the officers of the School will do their utmost to see that a program is designed which is the most satisfactory for the individual student. In certain cases, other institutions may be recommended which suit the student's needs better. Furthermore, it is important that those with educational problems to solve should realize the necessity for care in approaching educational work so that the program selected will be on the best educational basis.

INFORMATION REGARDING ADMISSION

Admission Requirements

Any man or woman of good moral character, regardless of occupation, race or creed, who has completed at least eight grades of a grammar school, or the equivalent, and is over sixteen years of age, may enroll in the School.

The courses offered are designed to prepare students to enter institutions of higher learning. Those students, however, who do not intend to proceed to higher institutions may select from the offering of courses a special combination of subjects which will benefit them in the work in which they are engaged during the day. Before enrolling for such subjects, students are urged to see the Principal, explaining the particular nature of the employment in which they are engaged, so that he can arrange the program best suited for their needs. Special combinations of subjects may be selected to embrace business, science, or special technical work.

Applications for Admission

Students who plan to enter the School must file the official application blank which must be accompanied by the registration fee of five dollars. All applications for admission should be filed as early as possible in order that the status of each student may be definitely determined and a satisfactory program arranged before the actual opening of the term.

Credit from Other Schools

Students who have completed high school work in other approved institutions may obtain credit for that work towards the diploma of this School by presenting a certified transcript of record from the school previously attended. The officers of the School are glad at all times to obtain for prospective students transcripts of their records of work at other schools, evaluate such records in terms of diploma credits and suggest a program, indicating the cost of the program and the time necessary to meet graduation requirements.

The responsibility devolves upon the student for making sure that his program does not contain a subject for which prior credit has already been awarded in some other school. Such courses, however, may be taken without credit as review courses preparatory to later advanced work.

SCHEDULE INFORMATION

Terms and Hours of Attendance

When arranging a program for a student the School officers usually assign work which requires attendance for *only two evenings a week*.

All classes are scheduled to meet between the hours of 7 P.M. and 10 P.M.

Each term a schedule is prepared listing the courses to be offered and the hours at which they meet. A copy may be obtained on request.

Following is the general arrangement for the completion of a course in each term of the school year.

Regular Term

The Regular Term begins in September and continues for 32 weeks. Non-Science courses are offered on Tuesday and Friday evenings and a student may carry one, two or three full-unit courses. Each full-unit course requires attendance for one hour *twice* a week.

Science courses are offered on a different evening and require attendance three hours per evening once a week. A student may carry one Science course in addition to the three non-Science courses mentioned.

Winter Term

The Winter Term begins during the first week in January and extends for 20 weeks. Classes meet on Tuesday and Thursday evenings during this term. A student may carry two non-Science courses, each requiring attendance for one and a half hours twice a week, or one Science course which requires attendance for three hours *twice* a week.

Summer Term

The Summer Term begins during the first week of June and extends for 15 weeks. The work is carried on more intensively than in the Regular Term or Winter Term, but the same material is covered. Classes meet on Monday and Thursday evenings during this term.

A student may carry two non-Science courses, each requiring attendance for one and a half hours twice a week, or one Science course which requires attendance for three hours *twice* a week.

Courses of Study

<i>Subject</i>	<i>Term Offered</i>
Algebra 1	All Terms
Algebra 2	All Terms
*Biology	Regular and Summer Terms
*Chemistry	All Terms
Economics	Regular and Summer Terms
English 1	All Terms
English 2	All Terms
English 3	All Terms
English 4	All Terms
French 1	Regular and Summer Terms
French 2	Regular and Summer Terms
French 3	Regular Term
Geometry (Plane)	All Terms
Geometry (Solid)	All Terms
German 1	Regular Term
German 2	Regular Term
Government	Regular and Summer Terms
History (Ancient)	Regular Term
History (European)	All Terms
History (English)	Regular Term
History (United States)	All Terms
Latin 1	Regular and Summer Terms
Latin 2	Regular and Summer Terms
Latin 3	Regular Term
*Physics	All Terms
Problems of Democracy	Regular Term
Spanish 1	Regular Term
Spanish 2	Regular Term
Trigonometry	All Terms

*These courses meet only once a week in the regular term and twice a week in the winter and summer terms. All other courses meet twice a week.

DIPLOMA INFORMATION

The Unit System Explained

Frequent reference is made in this catalog to "units," and that there may be no misunderstanding in the minds of students, this explanation is offered. A unit of high school credit is given upon the satisfactory completion of the work of one school year in a single standard subject, the equivalent of which is covered by this School in thirty-two weeks or in the intensive courses of twenty and fifteen weeks offered in the winter and summer terms respectively. The following exception is to be noted: Four full courses in English total three units towards graduation or towards college entrance, and Solid Geometry and Trigonometry are half-unit courses.

Requirements for Graduation

The diploma of the Lincoln Preparatory School is granted without charge to the student on the completion of a total of fifteen units of work, *of which at least four must have been earned in the Lincoln Preparatory School*. In addition, each student must have completed in this School or elsewhere the required subjects for the diploma.

Admission to College

Since the Lincoln Preparatory School offers regular college preparatory courses for those who wish to enter college, a student, according to his record and his plan of procedure, may enter college in one of the following ways:

By Diploma. Certain colleges will admit students on the diploma from this School. Among these colleges are all those that accept a standard high school diploma.

By Examination. Certain colleges require examination from all candidates. This School prepares students for all college entrance examinations and for the examinations of the College Entrance Examination Board.

By Certificate. Certain colleges will accept students for admission without examination, providing they have certificate grades. Generally speaking, *institutions that accept students by the certificate method will accept the certificate of this School. The certificate grade is 80 per cent.*

Admission to Hospital Training Schools

The work conducted by the Lincoln Preparatory School is accredited by the Massachusetts hospitals and by the State Board of Registration in

Medicine. The State Board of Registration in Medicine and the Board of Registration of Nurses have ruled that a high school education or its equivalent is a prerequisite for admission to hospital training schools. The high school certificate must show the completion of fifteen units accepted by the high school in meeting graduation requirements.

Since the School is fully accredited, most hospitals will admit students who hold the diploma of the School even though all grades are not of certificate rank. A few hospitals, however, require certificate grades of candidates for training. Certificate grades from this School are acceptable. Each student should ascertain, however, the definite entrance requirements of the hospital she plans to enter.

An officer of the School will be glad to arrange a program so that these electives will be judiciously chosen, not only to aid the student in the subsequent subjects, but to meet the requirements of other states with which a reciprocal arrangement exists with the State of Massachusetts.

For those already engaged in the profession of nursing, attention is directed to facilities which are available to those who have not completed a high school education in accordance with the above demands. New regulations have been formed regarding institutional promotion and regarding teaching and administrative positions in hospitals, and while such legislation is not retroactive, it will certainly prove helpful to those who already occupy such positions to be adequately equipped for advancement and promotion in the event of transfer.

How Long Will It Take to Obtain a Diploma?

The flexible schedule and the twelve months' operation of the Lincoln Preparatory School enable a student to save considerable time. The exact time that it will take to obtain a diploma is dependent upon credit from former institutions attended, hours available for study, and the number of courses pursued. A student who enters school without any credit for former high school attendance can complete his course in from three to five years, according to the number of summer terms he attends. However, it is urged upon students that *a high school education is a matter of accomplishment and not a matter of time*, and the School insists on a high standard of accomplishment.

PROGRAM INFORMATION

How to Plan Your Program of Classes

In choosing subjects each term, students should bear in mind:

- (a) The requirements for graduation from the Lincoln Preparatory School. These are given in the section below.
- (b) The admission requirements of the higher institution they wish to enter. Catalogs of most colleges are on file at the School office. In case of doubt, consult these and talk with the Principal or his assistants.
- (c) Language and Mathematics requirements vary somewhat for entrance to the different colleges. This is especially true of the Latin requirements. Some colleges require three entrance units in either French or German. *It is the student's responsibility to meet the requirements of the college he elects to enter.*
- (d) The special requirements for various professions and vocations.
- (e) Their special interests, in the event that courses are chosen from the cultural point of view.

It is especially important to meet the requirements for graduation so that a diploma may be obtained. Most colleges and hospitals and many lines of business and industry not only require fifteen units of high school work, but also insist that the student be a graduate of a recognized high school. Moreover, in business and in everyday life it means infinitely more to say one is a high school graduate than merely to say one has completed fifteen units of high school work.

Required Subjects

In order to be eligible for a Lincoln Preparatory School Diploma, every student must complete, either in this school or elsewhere, the following subjects:

Required:	Units
English (4 years)	3
United States History	1
Science (either Physics, Chemistry or Biology)	1
	—
	5
Electives	10
	—
	15

These elective ten units should be selected in view of the student's future plans.

Typical College Admission Requirements

Particular attention is called to the wide variation in admission requirements among the various colleges, universities and professional schools. Listed below are typical requirements for the various types of schools. They are, however, general in nature. *It is the student's responsibility to meet the requirements of the college he elects to enter*, and it is recommended that he consult the Director of Admissions of that college in ample time to arrange a program which would qualify him for admission.

A. For admission to Engineering Schools and Colleges of Liberal Arts offering the degree of Bachelor of Science

Required:	Units
English (4 years)	3
Algebra	2
Plane Geometry	1
Trigonometry and Solid Geometry	1
French or German or Spanish	3
United States History	1
Physics	1
	—
	12
Electives	3
	—
	15

B. For admission to Liberal Arts Colleges offering the degree of Bachelor of Arts

Required:	Units
English (4 years)	3
Algebra	2
Plane Geometry	1
French or German or Spanish	3
United States History	1
Physics or Chemistry or Biology	1
	—
	11
Electives	4
	—
	15

C. For admission to Colleges of Business Administration

<i>Required:</i>	Units
English (4 years)	3
Algebra	1
United States History	1
Science, social studies, mathematics and/or foreign language	5
Physics or Chemistry or Biology	1
	<hr/>
	11
Electives	4
	<hr/>
	15

D. For admission to Training School for Nurses

<i>Required:</i>	Units
English (4 years)	3
Mathematics	1
United States History	1
Chemistry and Biology	2
	<hr/>
	7
Electives	8
	<hr/>
	15

Electives

The remaining units needed to complete the required fifteen units can be selected from the following groups, with the provision that no more than four units will be accepted in any one group. *Students should bear in mind that one unit of a foreign language is not acceptable for credit* and that most schools will accept two units of two foreign languages in place of three units of one foreign language.

Foreign Language	Social Studies
Mathematics	Commercial Studies
Science	Fine and Practical Arts
	Miscellaneous

ADMINISTRATIVE REGULATIONS

Examinations and Quizzes

Examinations are held throughout the term at the discretion of the instructors. Final examinations are required upon the completion of all courses. The following system of grading is used:

- A — 90 to 100 — Excellent
- B — 80 to 89 — Good
- C — 70 to 79 — Fair
- D — 60 to 69 — Lowest Passing Grade
- E — 50 to 59 — Conditioned
- F — Below 50 — Failure

A student marked E (Conditioned) may enroll in the advanced course in the same subject immediately following, but upon condition that he remove his deficiency by special examination early in the next term. A fee of \$3 is required for each such examination regularly scheduled.

Transfers

Students are not permitted to change from one course to another without first consulting the Principal or other duly authorized officer of the School and receiving a Transfer Order.

Reports of Standing

An informal report of the student's standing is issued at mid-term; and the formal report, covering the full record of the term, is issued at the close of each year.

In the case of students who are under twenty-one years of age, reports may be sent to parents in the event of unsatisfactory work on the part of the student, non-compliance with administrative regulations, continued absence, and withdrawal. Parents of minors may obtain reports at any time on request.

Attendance Requirements

A careful record of attendance upon class exercises is kept for each student. Absence from regularly scheduled classes on any subject will seriously affect the standing of the student. It may cause the removal of certain subjects from his schedule and the listing of these as "conditioned subjects." However, if reasonable excuse for absence be presented, the student may be allowed to make up the time lost, and be given credit for the work; but he must complete the work at such time and in such manner as his instructor in the course shall designate.

Students who are absent for six consecutive sessions are automatically withdrawn from the class rolls and may not be admitted to class until they have been reinstated by the Principal.

A minimum attendance record of 75 per cent must be maintained in all classes before a student will be admitted to examination.

Scholarships

The Executive Council has made available a few scholarships to assist needy students of good mental capacity who, because of financial limitations, might be deprived of educational opportunities. The award when a scholarship is granted is never in excess of one-half of the student's tuition fees for the year.

Late Registration

Those who find it necessary to register late may at the discretion of the Principal be permitted to enter the School provided they have not lost so much work as to render it impossible for them to proceed with the courses. Only in exceptional cases is one admitted to a class after the third session.

No reduction in fees is made because of late enrollment.

Examination Fees

The fee for a condition or make-up examination regularly scheduled is \$3.

The fee for a make-up quiz regularly scheduled is \$1.50.

Charges for Damages

Students who damage apparatus in the laboratories or who willfully destroy School property will be responsible for the replacement of such damaged articles or for the cost of replacing where this is undertaken by the School.

TUITION AND OTHER FEES

Matriculation Fee

A matriculation fee of \$5.00 must accompany the initial application for admission to the School. This fee is not refundable.

Tuition

The cost of each course is \$40.00, with the exception of Solid Geometry and Trigonometry, which are \$20.00 each if taken separately.

Payment Plans

For each term indicated below is listed the appropriate payment plan. When these plans are adopted, they must be rigidly adhered to. *In certain cases, however, even the special plan of payment will not meet the needs of many deserving students. Such students are requested to confer with an officer of the School, who will arrange a satisfactory plan for the payment of fees.*

Regular Term

Tuition is payable in four instalments. The first payment is due at the time of registration. The subsequent payments are due on November 20, January 29 and March 19.

Winter Term

Tuition is payable in two instalments. The first payment is due at the time of registration. The second payment is due on March 19.

Summer Term

Tuition is payable in two instalments. The first payment is due at the time of registration. The second payment is due on July 18.

Laboratory Fees

Biology: A laboratory fee of \$5.00 is charged to students taking Biology.

Chemistry: A laboratory fee of \$5.00 is charged to students taking Chemistry, and, in addition, they are required to make a laboratory deposit of \$5.00. The unused portion of this deposit is refunded after deduction for breakage and non-returnables.

Late Payment Fee

Bills for tuition and fees are payable on or before Saturday of the week of issuance. A Late Payment Fee of \$2.00 is charged for all students failing to comply unless special payment arrangements are approved by the Students Accounts Office.

Late Registration Fee

Students are urged to register well in advance of the official opening of the semester, since any student who registers after Saturday of the opening week of the School term is charged a late registration fee of \$5.00.

REFUND OF TUITION

Requests for refunds must be made at the time of filing the application for withdrawal at the school office. If the withdrawal notification is sent in by mail, the refund should be requested in the letter with reasons which necessitate the withdrawal. *No refunds will be granted to a student who voluntarily withdraws* or who has attended more than five weeks of the term for which payment has been made.

Refunds of tuition will be considered only in the following instances:

1. If, because of illness, a student is compelled to withdraw before the fifth week of the term, or
2. If a student who is regularly employed is sent out of town permanently by his employer, or
3. If the hours of employment of a student who is regularly employed are changed so as to make it impossible for him to continue in attendance, or
4. If a student is inducted into military service.

The Committee on Withdrawals will consider requests for tuition refunds only on the following bases:

1. That the application for withdrawal be made immediately after the student ceases attendance;
2. The request for refund is accompanied by an *acceptable* physician's certificate in the instance of illness, or by an *acceptable* employer's certification in the instance of a change in place or hours of employment;
3. Evidence of induction into military service.

For cases complying with the above, partial refunds on tuition for the half year may be allowed according to the following schedule:

Petition for Withdrawal Filed Within:

	Refund to Student in—		
	<i>Regular Term</i>	<i>Winter Term</i>	<i>Summer Term</i>
One Week	80 per cent	80 per cent	80 per cent
Two Weeks	80 per cent	80 per cent	60 per cent
Three Weeks	60 per cent	60 per cent	40 per cent
Four Weeks	40 per cent	40 per cent	20 per cent
Five Weeks	20 per cent	20 per cent	0 per cent
Six Weeks	0 per cent	20 per cent	0 per cent
After Six Weeks	0 per cent	0 per cent	0 per cent

The above does not include fixed or non-refundable fees or laboratory fees for which there is no refund allowed.

The official "Application for Withdrawal" form may be obtained in the school office. All refunds are made through the Student Accounts Office of the University. The refund procedure in such cases takes from two to three weeks. A check is mailed directly to the student for any refund to which he is entitled.

OUTLINES OF COURSES

The Lincoln Preparatory School reserves the right to change the arrangement of courses, the requirements for graduation, tuition fees, and other regulations affecting the students. Such regulations will affect both old and new students.

Note: The courses of the School are arranged in "units."

A unit is ordinarily the amount of work covered in a single subject taken four or five times a week for a year in a standard day high school.

In this School a unit may be covered in each subject in thirty-two weeks. See page 17 for explanation of unit system.

Students carry one, two or sometimes four subjects at a time. Fifteen units, properly selected (see pages 18 and 19), are required for graduation.

The high school courses described below are the equivalent of similar courses offered in a standard day high school.

English

The fundamental purposes of the department are to give the student efficient training in grammar in order to afford a sound basis for correct speech and writing; to instill correct principles of constructing sentences and paragraphs; to help him enlarge his vocabulary and to acquire an interest in words; to train him in the elements of logic as related to the organization and expression of thought; to teach him how to study; to impart an elementary knowledge of the types and the history of English literature; and to aid him in forming a taste for good literature and a genuine appreciation thereof.

English 1. This course is designed to bridge the gap between grade and high school English. Fundamentals of English Grammar, sentence building, and revision, the more important rules of spelling and punctuation, word and vocabulary building, introduction to paragraph writing, practical exercises in speaking and writing, letter writing, and an introduction to literary selections as models for voluntary reading are presented.

English 2. This course marks the beginning of a more intensive study of English, both as a tool and as literature. Functional grammar, sentence revision based on principles of rhetoric, diction (word study), development of the paragraph, careful planning of themes, and a beginning of the critical study of literary forms, both poetry and prose, form the basis of the course.

English 3. A review of grammar, punctuation, sentence structure, and paragraph construction prepares the student for the writing of various types of compositions. Special attention is given to the development of a well-rounded vocabulary. Readings from American literature include the short story, essay, drama, novel, and different types of poetry.

English 4. This course completes the two-year sequence begun in English 3. It prepares students for college entrance and College Board examinations and also

stresses the needs of the student who does not intend to pursue formal study in a higher institution. By means of thought-provoking reading material, both classic and modern, it stimulates written expression on subjects of interest to the individual student. Compositions are submitted at regular intervals throughout the term. The essay, the drama, the lyric poem, and prose fiction are studied, and the principles underlying these forms of art are presented.

Latin

Exercises in translation at sight begin with the first lessons in which Latin sentences of any length occur, and continue throughout the course to insure correct methods of work on the part of the student. In the translations of passages from the Latin, the use of clear and natural English is insisted upon. Reading aloud is encouraged. The work in Latin Composition aims to give the student a thorough knowledge of the fundamental principles of Latin syntax. It has been found advantageous to use a double system of notebooks, calling for special written work from the student. This work deals with Latin forms, principles of Latin syntax, writing of English-Latin sentences, and finished translations of selected passages from the Latin. These courses in Latin fulfill the requirements of college entrance examinations.

Latin 1. Exercises in translations, English-Latin, Latin-English. Drill in Latin forms, drill in Latin syntax. The course aims to give the student a thorough knowledge of the fundamental principles of Latin syntax.

Latin 2. The Latin reading is not less in amount than Caesar, Gallic War, I-IV. This amount of reading is taken from Caesar (Gallic War and Civil War), Nepos (Lives), Aulus Gellius, Eutropius, Phaedrus, Quintus Curtius Rufus, and Valerius Maximus, or books of selections containing some of these with other authors of prose works. Special attention is given to sight translation, to vocabulary study, to the Latin Word List, which contains those words the student is expected to know at the end of two years of the study of Latin. There is continued drill in Latin syntax and in Latin forms. This course in second year Latin aims to meet the needs of those students who plan to enter colleges that require only two years of Latin.

Latin 3. The Latin reading is not less in amount than Cicero, the oration against Catiline, for the Manilian Law, and for Archias. This amount of reading is selected from Cicero (orations, letters, and De Senectute), Sallust (Catiline and Jugurthine War). The reading for the year includes selections from such authors as Pliny, Livy, or books of selections containing these and other authors of prose works. Special attention is given to the study of passages of Latin prose set for comprehension. The course aims to cultivate in the student the ability to render unseen passages of Latin prose into clear and natural English, as well as the ability to write simple Latin prose. Due attention is given, therefore, to vocabulary study, to the Latin Word List, which contains those words the student is expected to know at the end of three years of the study of Latin. The political and social life in Rome in the time of Cicero is studied.

French

The courses in French are planned with the purpose of giving the students (1) an appreciative comprehension of French, both as literature and as a spoken language; and (2) a sufficient knowledge to fit them for advanced work. The essentials of the grammar are mastered by continued drill and constant application. The attainment of good pronunciation receives careful attention, and from the beginning the student is trained to understand spoken French.

French 1. This course begins with instruction in pronunciation. Phonetic symbols are not used. The acquisition of a basic vocabulary is stressed and the memorizing of word groups and short sentences.

The instruction in grammar consists of the elementary forms and uses of articles, nouns, adjectives, pronouns, adverbs, regular verbs, and a few common irregular verbs. Much emphasis is placed upon written translation of English into French.

The reading text provides for the translation of at least fifty pages of simple French. This is largely oral translation.

French 2. This course completes the elements of grammar and syntax, with special emphasis upon forms and practice in their use in written composition. Frequent review lessons help to make the student familiar with the essentials.

French 3. Carnahan's "Short French Review Grammar" is used and provides a general review and further advance in grammar and in written translation of connected prose with special emphasis on constructions involving the use of verbs and pronouns. Labiche's *Voyage de M. Perrichon* is the reader for the course.

German

At the end of the elementary course in German, the student should be able to read at sight and to translate a passage of easy German prose. He should be able to put into German, short English sentences taken from the language of everyday life, and to answer questions upon principles of German grammar. The course aims to meet the needs not only of those students who are seeking a general knowledge of German, but also of those students who are planning to take the college entrance examinations.

German 1. Vos "Essentials of German" is used as a grammar and composition book. Drill in pronunciation; practice in reading the German text aloud; composition; translation; study of verbs and idioms. An elementary German reader is used.

German 2. Vos "Essentials of German" is used as a textbook. A review of the work of German 1 is followed by further study of grammar, with emphasis on verbs, idioms, the accumulation of a practical vocabulary, and conversation. A second year reader is the basis for practice in conversation, vocabulary building, and reading for comprehension.

Spanish

Spanish 1. The work of the first year is planned to cover the requirements of elementary Spanish as given in high school. It serves as a complete unit in fundamentals for the student who wishes to continue the language independently by study, travel, or reading. Correct pronunciation, a knowledge of the grammatical structure of the language, and an ability to read and write within the limits of a practical vocabulary are the goals of the course. Standard elementary readers are used in connection with a grammar text such as Hills and Ford, "First Spanish Course."

Spanish 2. After a rapid review of the work covered by Spanish 1, the second year is devoted to a further study of grammar, the enlargement of vocabulary, including common idioms, and the increase of skill and speed in translation and conversation. The course prepares for the elementary examination in Spanish given by the College Entrance Examination Board. The use of a standard grammar is supplemented by reading of current as well as classical Spanish.

History, Government, Economics

The aim of the department is to give a broad knowledge of vital conditions in the growth of the leading countries of the world. This includes the study not only of important historical facts, but more especially of the progress of development in government, society, business, religion, and education. The past is studied that the present may be better understood.

History (English). This course is a study of English History from the time of the Roman Conquest to the present. Special emphasis is given to the study of the structure of government and the legal system because of their bearing upon American development. Study of English foreign policy is essential to a better understanding of international problems of the present. Study of church problems, the Industrial Revolution, democratic growth and England's continental alliances and her part in World War I and II are stressed. England's social and economic changes of the present in the light of world social and economic conditions are emphasized.

History (United States). A careful and comprehensive study is made of our history with special reference to cause and result. The foundation of our Constitution, banking and currency, tariff, farm and labor problems, foreign policy, and economic and social development and reform are given special attention. The course is designed to cover the requirements of the College Entrance Examination Board.

History (European). In this course a study is made of the European powers from the beginning of the seventeenth century to the present. Autocracy rampant in the seventeenth and eighteenth centuries begins to decline in the latter eighteenth century with the French Revolution. The decline continued in the nineteenth century, giving way to democracy, which reached its peak following the

World War, only to yield in many countries to dictatorships of the present day. International relations are traced, noting especially the influence of commerce and the subsequent imperial rivalries and wars. The Industrial Revolution, with its profound effect upon humanity, forms another important part of the course. Considerable stress is given to great leaders of the different European powers. Events leading up to World War II are discussed and the social, economic, and political repercussions as a result of the war are studied.

History (Ancient). This course covers a brief account of development of the early civilizations of the eastern Mediterranean area and the Tigris-Euphrates Valley. An intensive study is made of the Greek and Roman civilizations with special reference to the culture of each. The course also includes a brief study of the Germanic invasions, the rise and early growth and recognition of Christianity; the rise and development of Mohammedanism; the growth of the Papacy and monasticism; and the Empire of Charlemagne. The course covers the requirements of the College Entrance Examination Board.

Government. The first semester consists essentially of a detailed study of the Constitution of the United States, noting carefully the functions and importance of the executive, legislative, and judicial branches. A less detailed study is made of state and local government.

During the second semester a study of Latin American countries is undertaken with special attention to our "Good Neighbor Policy." Then follows a study of European countries with a view of promoting a better understanding of their governments, systems of economics, and social problems to the end that international goodwill may be furthered.

Problems in Democracy. This course is a study of the more common problems that face American Democracy in the world today. The approach is historical and factual. The treatment is functional. Political, social, cultural, and economic aspects of civilization are included. Some of the subjects are government and business; international trade and tariffs; markets and marketing problems; labor and government; big business and labor; collective bargaining; consumption and standards of living; national resources, their use and conservation; social security; human conservation; public health and security; government, federal, state, and local; political parties; propaganda and public opinion; national defense and international problems; diplomacy; world peace; regional defense agreements; modern national ideologies such as fascism and communism; United States, a world power; good neighbor policy; reciprocal tariffs and other related matters. The course is an introduction to the overall study of many national problems in the world today.

Economics. A careful study is made of the origin and development of our industrial system, and an analysis into its component parts, together with the economic phenomena accompanying them. It is intended to make economics of practical value in everyday life.

During the second semester the course embraces the reform and improvement of our industrial system; taxation, the tariff, international trade, transportation, labor and capital, public ownership, wages and profits, and other current economic problems are treated.

Mathematics

The courses in mathematics are planned to meet the needs of all secondary students. They afford an opportunity for preparation in the mathematical processes which are necessary for success in industrial, commercial, or professional careers. They are intended (1) to acquaint the student with such mathematical processes and methods as he is most likely to need in the successful pursuit of other studies and in the various trades and occupations; (2) to prepare the student for the successful pursuit of the more advanced branches of mathematics in technical schools and colleges.

Algebra 1. This course introduces the student to: (1) the positive and the negative number; to its application in the four fundamental operations leading up to the solving of formulas and equations, both linear and fractional, in one and two unknowns; (2) the function of the graph for both pictorial representation and the solving of equations; (3) the literal number and the study of problems.

Algebra 2. Review of Elementary Algebra with more difficult problems. Quadratics and simultaneous quadratic equations, with applications, ratio, proportion, and variation, progressions, binomial theorem, logarithms, and that part of Trigonometry required by the College Entrance Examination Board.

Geometry, Plane. The five books of Plane Geometry are studied. The numerous original exercises stimulate the power to reason clearly and to derive logical proofs. Special attention is given to those who expect to take college entrance examinations. This course meets College Entrance Board requirements.

Geometry, Solid. This course deals with appreciation of three dimensional relations, formal proofs of the standard theorems and originals, locus problems, properties and measurement of prisms, pyramids, cylinders, cones and the sphere.

Trigonometry. The major topics covered by this course are the theory and use of logarithms, solution of right and oblique triangles, trigonometric equations, proofs of fundamental formulas and identities based upon them, radian measure.

Science

Biology. This is a comprehensive course in Biology designed to meet the requirements of the following persons: (1) prospective college students who are preparing for college entrance and College Board Examinations; (2) students who plan to enter institutions requiring credits in some science; (3) prospective nursing students; (4) those who desire an elementary knowledge of the structure and function of plant and animal life.

The multiple objectives of the course are: to gain the best approach to an understanding of facts, principles, and theories and to apply them in various ways; to help the student to develop a special interest in some part of the course; to give a fundamental understanding of living things, of their structure and function; to give a survey of the plant and animal kingdoms with the primary objective of creating interest in and appreciation of nature; to present the economic aspects of

Biology; to present an adequate understanding of hygienic principles underlying all healthful living organisms; to meet the requirements of an elementary course in any life science which aims to contribute to both avocational and vocational training.

The course consists of lectures, demonstrations, discussions, and laboratory work.

Physics. This course is intended for two groups of students. First, it will meet the requirements of those expecting to enter a college or technical school. Secondly, it is intended to help those who wish a general knowledge of the important laws and principles of Physics as applied to modern everyday experiences. The applications of Physics in such fields as household appliances, the weather, the automobile, the airplane, radio, etc., are particularly stressed with the idea of giving a background of culture and enjoyment.

Many students interested in mechanical lines will find it giving them a clearer understanding of the operations of devices of which they make constant use.

Laboratory experiments and lecture table demonstrations will illustrate the subject matter studied in the text.

Although the course is not intended to be highly theoretical, an elementary knowledge of Algebra and Geometry will be of assistance in the solution of problems.

Chemistry. This course has the twofold aim of preparing the student in Chemistry for entrance to any college or technical school and providing a general introduction to the subject for other purposes.

There are class discussions of chemical principles and of chemical materials, solution of numerical problems, practice in such exercises as writing of equations, demonstration experiments carried through by the instructor. The student does assigned experiments in the laboratory and writes reports of his work.

The more important elements, both non-metallic and metallic, as well as numerous compounds, are studied. Important laws and hypotheses of Chemistry are constantly stressed.

Unless there is urgent reason for following a different order, the student is advised to arrange his succession of courses in such a way that Chemistry will be preceded by a study of Physics.

THE LINCOLN PREPARATORY SCHOOL

360 Huntington Avenue, Boston 15, Mass.

Application for Admission

Application Received by..... Date.....19..

A fee of five dollars must accompany this application. Make checks, money orders, or drafts payable to the Lincoln Preparatory School

This fee is not refundable

.....
(date)

To the Headmaster:

I,.....
(First Name) (Middle Name) (Last Name)
hereby apply for admission to the Lincoln Preparatory School, and submit the following information:

.....
(Street Address)

.....
(Town)

Age.....Date of Birth.....

Citizen of U.S. Yes ☐ No ☐

Home Telephone.....

Business Address.....
(Concern) (Street) (City)

Business Telephone.....Occupation.....

List other high schools attended (State whether day or evening)

Name of School	Approximate Date of Attendance	Day or Evening

Do you wish to receive the diploma of this school?.....

Do you merely wish to earn credits here without qualifying for the diploma?.....

Do you plan to enter college?.....

If so, which college?.....

If under 21, give name of parent or guardian.....

.....
(Signature)

THE LINCOLN SCHOOLS

Evening Sessions

CLASSES OPEN TO MEN AND WOMEN

LINCOLN TECHNICAL INSTITUTE

Associate in Engineering Programs

Courses leading to the Degree of Associate in Engineering are offered in the following major fields:

CHEMISTRY

ELECTRICAL

INDUSTRIAL

CIVIL-STRUCTURAL

ELECTRONICS

MECHANICAL

B.B.A. Degree Program

A six-year program conducted in conjunction with Northeastern University School of Business is available which leads to the degree of B.B.A. in Engineering and Management awarded by Northeastern University.

Special Programs

For those who do not wish to take one of the regular programs, special programs consisting of one or more courses can be arranged to meet individual needs.

LINCOLN PREPARATORY SCHOOL

Individual High School subjects to meet particular needs, or leading to a Diploma, are available.

Students may enter in September, January, and June.

For further information write, indicating the school in which you are interested

THE LINCOLN SCHOOLS

360 HUNTINGTON AVENUE, BOSTON 15, MASSACHUSETTS

Telephone: KEnmore 6-3177

WELLS BINDERY
WALTHAM, MASS.
AUG. 1950

